



1246951  
(00676524)

OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

NOV 13 2017

17-ECD-0069

Ms. Alexandra K. Smith, Program Manager  
Nuclear Waste Program  
Washington State  
Department of Ecology  
3100 Port of Benton Blvd.  
Richland, Washington 99354

Ms. Smith:

NOVEMBER 2017 QUARTERLY REPORT FOR THE STATE OF WASHINGTON VS.  
U.S. DEPARTMENT OF ENERGY, CASE NO. 08-5085-RMP, FOR WASTE TREATMENT  
AND IMMOBILIZATION PLANT CONSTRUCTION AND STARTUP ACTIVITIES AND  
TANK RETRIEVAL ACTIVITIES – JULY 1, 2017, THROUGH SEPTEMBER 30, 2017

This letter transmits the U.S. Department of Energy November 2017 Quarterly Report  
(Attachment) under Section IV-C-1 of the subject referenced Consent Decree, for the period of  
July 1, 2017, through September 30, 2017. Pursuant to the Consent Decree, this report provides  
the status and progress made during the reporting period.

As requested by the Washington State Department of Ecology, copies of the directives given to  
contractors for work required by the Consent Decree are also attached.

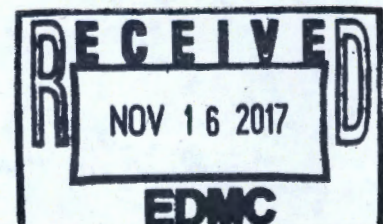
If you have any questions, please contact William F. Hamel, Assistant Manager, Waste  
Treatment and Immobilization Plant Project, (509) 376-6727, or Glyn D. Trenchard, Assistant  
Manager, Tank Farms Project, (509) 373-4016.

ECD:RLE

Attachment

cc: See page 2

*for Mark S. Edgren*  
Brian T. Vance  
Manager  
M. S. EDGREN  
CHIEF OF STAFF





Ms. Alexandra K. Smith  
17-ECD-0069

-2-

NOV 13 2017

cc w/attach:

J.D. McDonald, Ecology  
K. Niles, Oregon Energy

**Administrative Record**

BNI Correspondence  
WRPS Correspondence

cc w/o attach:

M. Johnson, CTUIR  
R.S. Skeen, CTUIR  
S.L. Dahl, Ecology  
J.J. Lyon, Ecology  
J.B. Price, Ecology  
C.L. Whalen, Ecology  
L.C. Buelow, EPA (Acting)  
S.E. Hudson, HAB  
R.A. Kaldor, MSA  
R.E. Piippo, MSA  
G. Bohnee, NPT  
R. Buck, Wanapum  
R. Longoria, YN (Acting)  
D. Rowland, YN



Attachment  
17-ECD-0069  
(69 Pages Excluding Cover Sheet)

U.S. Department of Energy, Office of River Protection  
Quarterly Report, July 1, 2017, through September 30, 2017, and  
Waste Treatment and Immobilization Plant Direction Letters



## Office of River Protection Quarterly Report

**July 1, 2017, through September 30, 2017**

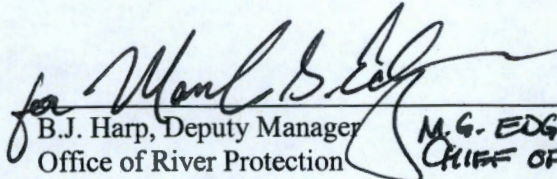
Consent Decree, *State of Washington v. Dept. of Energy*, No: 08-5085-FVS (October 25, 2010)

Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016)

Second Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (April 12, 2016)<sup>1</sup>



**2440 Stevens Center Place  
Richland, Washington 99352  
Office of River Protection**

*for*   
B.J. Harp, Deputy Manager  
Office of River Protection

*M.G. EDGREN*  
CHIEF OF STAFF

11-13-17  
Date

---

<sup>1</sup> The cited consent decrees are between the State of Washington and U.S. Department of Energy. For each of these decrees, there are companion, separate consent decrees with the State of Oregon, as Intervener, under the same case numbers.



**Project Earned Value Management System Reflects through August 2017 Information**

<b>Topic</b>	<b>Page</b>
ACRONYMS AND ABBREVIATIONS .....	II
INTRODUCTION .....	1
TANK FARM ACTIONS AND MILESTONES .....	2
SINGLE-SHELL TANK RETRIEVAL PROGRAM .....	3
TANK WASTE RETRIEVAL WORK PLAN STATUS.....	6
WASTE TREATMENT AND IMMOBILIZATION PLANT PROJECT .....	11
WASTE TREATMENT AND IMMOBILIZATION PLANT MILESTONES .....	13
PRETREATMENT FACILITY .....	19
HIGH-LEVEL WASTE FACILITY .....	24
LOW-ACTIVITY WASTE FACILITY .....	27
BALANCE OF FACILITIES .....	30
ANALYTICAL LABORATORY .....	34
WRITTEN DIRECTIVES .....	35
RETRIEVAL LABOR HOURS ON SELF-CONTAINED BREATHING APPARATUS .....	37
SPARE REBOILER REQUIREMENT STATUS.....	38



**Acronyms and Abbreviations**

BNI	Bechtel National, Inc.
BOF	Balance of Facilities
CGD	commercial grade dedication
CV	cost variance
DFLAW	direct-feed low-activity waste
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DSA	documented safety analysis
Ecology	Washington State Department of Ecology
EMF	effluent management facility
EVMS	Earned Value Management System
FY	fiscal year
HEPA	high-efficiency particulate air
HIHTL	hose in hose transfer lines
HLW	High-Level Waste (Facility)
LAB	Analytical Laboratory
LAW	Low-Activity Waste (Facility)
LBL	Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory
ORP	Office of River Protection
PDSA	preliminary documented safety analysis
PJM	pulse-jet mixer
PT	Pretreatment (Facility)
SCBA	self-contained breathing apparatus
SHSV	standard high-solids vessel
SV	schedule variance
WRPS	Washington River Protection Solutions LLC
WTP	Waste Treatment and Immobilization Plant



## Introduction

The U.S. Department of Energy (DOE), Office of River Protection (ORP) is submitting the following information to satisfy its obligation to provide “a written report documenting WTP construction and startup activities and tank retrieval activities” as required by Section IV-C-1 of the Amended Consent Decree in *State of Washington vs. United States Department of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) and Second Amended Consent Decree, same case (April 12, 2016).

The narrative descriptions of progress in this report cover the period from July 1, 2017, to September 30, 2017. Earned Value Management System (EVMS) data and descriptions cover the period ending August 31, 2017; this includes the facility completion percentage estimates included at various locations in the Waste Treatment and Immobilization Plant (WTP) section.

As the Washington State Department of Ecology (Ecology) has requested, written directives from July 1, 2017, through September 30, 2017, for work required by the Consent Decree have been included with this report.



**Tank Farm Actions and Milestones**

Number	Title	Due Date	Status
<i>Actions</i>			
D-16E-02	Have a spare A-E-1 <sup>1</sup> reboiler available by December 31, 2018.	12/31/2018	On Schedule
<i>Milestones</i>			
D-16B-03	“Of the 12 Single-Shell Tanks referred to in B-1 and B-2, complete retrieval of tank waste in at least 5.”	12/31/2020	Notice given that a serious risk has arisen. See letter 16-ORP-0097.
D-16B-01	“Complete retrieval of tank waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111.”	03/31/2024	On Schedule
D-16B-02	“Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106, AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3, DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly.”	03/31/2024	Notice given that a serious risk has arisen. See letter 16-ORP-0097.

<sup>1</sup> The Consent Decrees referred to the 242-A reboiler as “A-E-1”; the correct designation is “E-A-1.”

WMA-C = C Farm waste management area.



## Single-Shell Tank Retrieval Program

**Quarterly Statement:** Tank retrieval activities have complied with milestones already come due as of the date of this report. There are no missed milestones that may affect compliance with other milestones. DOE formally notified Ecology on December 6, 2016, that a serious risk had arisen that DOE may be unable to meet Consent Decree milestones B-2 and B-3. As stated in that notification letter:

DOE's ability to achieve these milestones has been adversely impacted by the expanded and extended use of self-contained breathing apparatus (SCBA) within all tank farms (i.e., all SST and Double-Shell Tank [DST]) farms resulting from issuance of the June 20, 2016 Demand Letter by the Hanford Atomic Metal Trades Council (HAMTC) to DOE and WRPS; the Stop Work Order issued by HAMTC on July 11, 2016; and the Memorandum of Agreement (MOA) entered into between HAMTC and WRPS on August 31, 2016, (hereinafter "the HAMTC Demand Letter, Stop Work Order, and MOA").

Ecology responded to DOE's December 6, 2016, letter on January 4, 2017, and requested a meeting in accordance with Section IV.C.3.b of the Consent Decree. That meeting occurred on March 16, 2017, contemporaneously with the Joint Three-Year Review under Section VI of the Consent Decree.

***Tank Farms Assistant Manager:*** Glyn Trenchard

***Federal Program Manager:*** Jeff Rambo

### Accomplishments during the Reporting Period

- Completed cover block removal at Tank AX-103 and Tank AX-101
- Removed five thermocouples from Tank AX-102 and Tank AX-104
- Removed obsolete sluicer from Tank AX-104
- Completed installation of the AX Tank Farm splitter box
- Completed Tank AZ-102 drop leg assembly installation in preparation for AX Tank Farm retrieval
- Completed fabrication and acceptance of the A Tank Farm and AX Tank Farm water service skid (POR466)
- Completed the A285 chemical and water service building
- Initiated installation of hose-in-hose transfer lines (HIHTL) for AX Tank Farm to Tank AZ-102
- Continued installation of new 13.8 kV transformer and infrastructure to provide power for AX Tank Farm retrieval
- Received extended reach sluicer systems for Tank AX-101
- Completed fabrication of two exhausters (POR518/519) for A Tank Farm



- Initiated Tank AX-103 pit clean out in preparation for long-length equipment removal
- Completed major equipment installation for Tank C-105 third technology
- Completed Tank C-105 third technology construction acceptance testing
- Initiated Tank C-105 third technology retrieval operations
- Completed the first sluicing, hot water rinse, high pressure water sluicing and caustic dissolution cycles of Tank C-105 third technology retrieval (Phase 1 of the third technology)
- Completed the removal and disposal of 18 HIHTL from C Tank Farm
- Document RPP-RPT-60173, *Retrieval Data Report for Single-Shell Tank 241-C-111*, was completed and submitted to Ecology via letter 17-TPD-0018, "The U.S. Department of Energy Office of River Protection Submits the Retrieval Data Report for Tank 241-C-111," on August 11, 2017, in accordance with Milestone M-045-86.

#### **Accomplishments Expected in the Next Reporting Period**

- Remove legacy long-length equipment from Tank AX-102 and Tank AX-104
- Initiate fieldwork to install exhauster pads for new A Tank Farm exhausters (POR518/519)
- Initiate video inspection of Tank A-104 and Tank A-105
- Complete AX Tank Farm POR126 and POR127 portable exhauster readiness activities
- Complete dispersion modeling for stacks at A Tank Farm, AX Tank Farm, and 242-A Evaporator
- Complete second planned water rinse cycle of Tank C-105 third technology retrieval (Phase 2 of the third technology)
- Complete high pressure water sluicing of C-105 to the limits of the approved second technology
- Complete retrieval of Tank C-105 using chemical dissolution to the limits of the approved third technology (Phase 2 of the third technology)
- Complete final rinsing of Tank C-105 and secure retrieval operations
- Construct ingress/egress tent at AN Tank Farm to support 20 HIHTL removals in fiscal year (FY) 2018 HIHTL
- Begin removing plates and hose barns, and start disconnecting eight HIHTL between C Tank Farm and AN Tank Farm.

#### **Issues Encountered during the Reporting Period**

ORP expects that Tank C-105 will be field complete by December 2017, which is three months later than the projected date reported in the October 2016 Consent Decree quarterly report (16-ECD-0054, "October 2016 Quarterly Report for the State of Washington vs.



U.S. Department of Energy, No. 08-5085-RMP, for Waste Treatment and Immobilization Plant Construction and Startup Activities and Tank Retrieval Activities – July 1, 2016, through September 30, 2016”). The impacts encountered during the previous reporting period are still affecting schedule performance (recovery).

### **Issues Expected in the Next Reporting Period**

The mandatory use of supplied air consistent with the Memorandum of Agreement continues to adversely affect worker efficiency in this reporting period for all work inside the tank farms, with the exception of the deployment of air purifying respirators for certain activities in AP Tank Farm. As a result, field work in the AX Tank Farm and A Tank Farm will be impacted. The installation of the A Tank Farm portable exhausters has been impacted, due to concerns with placement of the exhausters near the 242-A Evaporator stack. Exhaust stack modeling was completed and an alternate location was selected. The redesign of the A Tank Farm ventilation system was initiated in August. Washington River Protection Solutions LLC (WRPS) will provide a formal assessment of the exhaust stack modeling in the near term. ORP and WRPS will continue to evaluate and communicate to the State of Washington the near-term and long-term impacts of these actions.

### **Actions Initiated or Taken to Address Potential Schedule Slippage**

WRPS continues to increase the number of health physics technicians, industrial hygiene technicians, and skilled construction workforce to support tank waste retrieval efforts.



**Tank Waste Retrieval Work Plan Status**

Tank	TWRWP	Expected Revisions	Retrieval Technology		
			First	Second	Third
AX-101	RPP-RPT-58932, Rev. 1	Pending	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
AX-102	RPP-RPT-58933, Rev. 1	Pending	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
AX-103	RPP-RPT-58934, Rev. 1	Pending	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
AX-104	RPP-RPT-58935, Rev. 1	Pending	Sluicing with ERSS	High-Pressure Water deployed with ERSS	-
C-101	RPP-22520, Rev. 8	Complete	Modified Sluicing with ERSS	High-Pressure Water deployed with the ERSS	-
C-102	RPP-22393, Rev. 7	Complete	Modified Sluicing with ERSS	High-Pressure Water deployed with the ERSS	-
C-104	RPP-22393, Rev. 7	Complete	Modified Sluicing	Chemical Retrieval Process complete per 13-TF-0018	-
C-105	RPP-22520, Rev. 8	Complete	MARS-V	MARS-V-High Pressure Water Spray	Chemical Dissolution Process with ERSS
C-107	RPP-22393, Rev. 7	Complete	MARS-S	MARS-S-High Pressure Water Spray	Water Dissolution
C-108	RPP-22393, Rev. 7	Complete	Modified Sluicing	Chemical Retrieval Process complete per 13-TF-0025	-
C-109	RPP-21895, Rev. 5	Complete	Modified Sluicing	Chemical Retrieval Process complete per 13-TF-0037	-



Tank	TWRWP	Expected Revisions	Retrieval Technology		
			First	Second	Third
C-110	RPP-33116, Rev. 3	Complete	Modified Sluicing	Mechanical Waste Conditioning with an In-Tank Vehicle	High Pressure Water
C-111	RPP-37739, Rev. 2	Complete	Modified Sluicing	High pressure water using the ERSS	Chemical Dissolution Process with ERSS
C-112	RPP-22393, Rev. 7	Complete	Modified Sluicing	Chemical Retrieval Process	-

ERSS = extended reach sluicer system.

MARS-S = Mobile Arm Retrieval System-Sluicing.

MARS-V = Mobile Arm Retrieval System-Vacuum.

TWRWP = Tank Waste Retrieval Work Plan.

#### **Tank Waste Retrieval Work Plan Accomplishments during the Reporting Period**

- WRPS submitted the AX Tank waste retrieval work plans (Rev. 1) to ORP for review.

#### **Tank Waste Retrieval Work Plan Accomplishments Expected in the Next Reporting Period**

- Submission of the AX Tank waste retrieval work plans to Ecology.



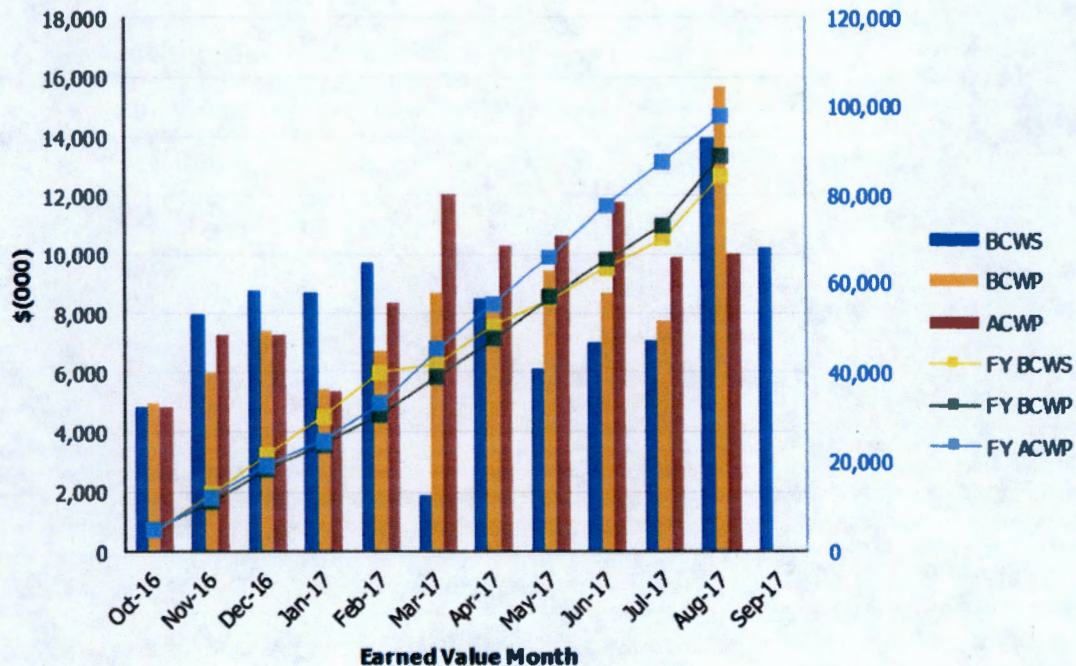
**EXC-01a: Fiscal Year Cost and Schedule Report**

Earned Value Data: Fiscal Year 2017

August-17

**Tank Farms ORP-0014**  
**Retrieve and Close SST's 5.02**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	\$4,816	\$4,996	\$4,822	1.04	1.04	\$4,816	\$4,996	\$4,822	1.04	1.04
Nov 2016	\$7,924	\$5,969	\$7,241	0.75	0.82	\$12,740	\$10,965	\$12,063	0.86	0.91
Dec 2016	\$8,772	\$7,401	\$7,262	0.84	1.02	\$21,512	\$18,365	\$19,325	0.85	0.95
Jan 2017	\$8,646	\$5,422	\$5,360	0.63	1.01	\$30,158	\$23,787	\$24,685	0.79	0.96
Feb 2017	\$9,716	\$6,707	\$8,341	0.69	0.80	\$39,874	\$30,495	\$33,026	0.76	0.92
Mar 2017	\$1,903	\$8,675	\$12,056	4.56	0.72	\$41,777	\$39,170	\$45,082	0.94	0.87
Apr 2017	\$8,477	\$8,214	\$10,268	0.97	0.80	\$50,254	\$47,384	\$55,350	0.94	0.86
May 2017	\$6,110	\$9,406	\$10,604	1.54	0.89	\$56,364	\$56,790	\$65,953	1.01	0.86
Jun 2017	\$6,982	\$8,684	\$11,807	1.24	0.74	\$63,345	\$65,474	\$77,761	1.03	0.84
Jul 2017	\$7,043	\$7,702	\$9,910	1.09	0.78	\$70,388	\$73,176	\$87,670	1.04	0.83
Aug 2017	\$13,912	\$15,660	\$10,002	1.13	1.57	\$84,301	\$88,836	\$97,672	1.05	0.91
Sep 2017	\$10,232									
CTD	\$793,468	\$786,886	\$818,346	0.99	0.96					

ACWP = actual cost of work performed.  
 BCWP = budgeted cost of work performed.  
 BCWS = budgeted cost of work scheduled.  
 CPI = cost performance index.

CTD = contract to date.  
 EVMS = earned value management system.  
 FY = fiscal year.  
 SPI = schedule performance index.



**Earned Value Management System Quarterly Analysis**

Project EVMS reflects data for June 2017, July 2017, and August 2017.

**Schedule Variance Summary:**

For the June EVMS reporting period, a net **favorable** schedule variance (SV) of \$1,702,300 was reported, primarily due to the following:

- **Schedule recovery:** Removed the second of six thermocouples from AX Tank Farm during June and also removed the cover blocks at Tank AX-103. This work had been previously delayed as a result of the Hanford Atomic Metal Trades Council stop work order related to waste disturbing activities and delays associated with installation of an active ventilation.
- **Schedule recovery:** Removed eight HIHTLs from C Tank Farm during June. This work scope had been previously delayed as a result of limited health physicist technicians and industrial hygienist technicians support due to other project/mission priorities.
- Tank C-105 construction crews worked additional shifts (Fridays and weekends) to accelerate recovery plans and initiate waste retrieval construction acceptance testing in June.

For the July EVMS reporting period, a net **favorable** SV of \$659,400 was reported, primarily due to the following:

- **Schedule recovery:** Two thermocouples were removed from Tank AX-102 and Tank AX-104 in July. This work had been previously delayed due to the waste disturbing stop work order prohibiting the operation of the ventilation system.
- Installation of the AX Tank Farm splitter box was completed in July, ahead of schedule due to favorable weather, efficiencies in work planning, and available resources.
- Tank C-105 construction crews worked additional shifts (Fridays and weekends) to accelerate recovery plans to support completing retrieval operational testing in July and to initiate waste retrieval operations on August 10, 2017.

For the August EVMS reporting period, a net **favorable** SV of \$1,747,700 was reported, primarily due to the following:

- **Schedule recovery:** Field crews completed removing a thermocouple from Tank AX-102 and initiated field activities in preparation to remove a sluicer from Tank AX-104. This work had been planned for early FY 2017 but was delayed due to the waste disturbing stop work order prohibiting the operation of the ventilation system.
- Installation of the AX Tank Farm splitter box was completed ahead of schedule due to favorable weather, favorable field conditions, efficiencies in work planning, and availability of all required personnel. As a result of the early installation of the AX Tank Farm splitter box, installation of the HIHTL from the splitter box in AX Tank Farm to Tank AZ-102 was accelerated and initiated in August.



- **Schedule recovery:** Tank C-105 extended reach sluicer system retrieval testing and declaration of retrieval readiness was completed 1 month later than originally planned (July). The delay was the result of two co-located activities: Replacement of a sump pump and failed hydraulic lines/fittings and removal of C Tank Farm hoses.

#### **Cost Variance Summary:**

For the June EVMS reporting period, a net **unfavorable** cost variance (CV) of approximately (\$3,123,300) was reported, primarily due to the following:

- Additional monitoring and controls having been implemented as a result of concerns associated with beryllium and chemical vapors within the A Tank Farm and AX Tank Farm. The additional controls reduced field productivity due to additional work planning processed, field sampling activities, and engineering input/reviews prior to field execution.
- Additional costs have been realized due to the construction surge (overtime/weekend work) to maintain the current restart of Tank C-105 retrieval (July).

For the July EVMS reporting period, a net **unfavorable** CV of approximately (\$2,207,400) was reported, primarily due to the following:

- Additional monitoring and controls have been required as a result of beryllium and vapors within A Tank Farm and AX Tank Farm. The additional controls have reduced field productivity and required additional work planning and engineering input/reviews prior to field execution.
- Additional costs were realized, due to the need for extra construction forces (overtime/weekend shifts) to support the restart of Tank C-105 retrieval operations, which occurred on August 10, 2017.

For the August EVMS reporting period, a net **favorable** CV of approximately (\$5,658,300) was reported, primarily due to the following:

- The budget was increased to accommodate performance already completed relating to the Tank C-105 third technology contract modifications. The negotiated value of \$49,400,000 included actuals through May 2017, resulting in single point adjustments (plus \$5,500,000) in August to reconcile the past budget estimate to negotiated values.



## **Waste Treatment and Immobilization Plant Project**

**Federal Project Director:** Bill Hamel

**Deputy Federal Project Director:** Joni Grindstaff

**Quarterly Statement:** The WTP Project has complied with applicable milestones already come due as of the date of this report. There are no missed milestones that may affect compliance with other milestones.

The WTP Project currently employs approximately 2,773 full-time equivalent contractor (Bechtel National, Inc. (BNI)) and subcontractor personnel. This includes 659 craft, 729 non-manual, and 159 subcontractor full-time equivalent personnel working at the WTP construction site (all facilities).

The WTP Project continues to focus on completion of the Low-Activity Waste (LAW) Facility, Balance of Facilities (BOF), and the Analytical Laboratory (LAB) (collectively referred to as LBL, including direct-feed low-activity waste (DFLAW) and LBL facility services). As of August 2017, LBL facilities were 59 percent complete, design and engineering was 84 percent complete, procurement was 70 percent complete, construction was 76 percent complete, and startup and commissioning was 20 percent complete.

### **Accomplishments During the Reporting Period**

- On August 15, 2017, Acting Assistant Secretary for Environmental Management James Owendoff met with Ecology Director Maia Bellon and Ecology Nuclear Waste Program Manager Alex Smith and had a brief conversation about several potential ideas to accelerate cleanup of the Hanford Site. Following this conversation, Acting Assistant Secretary Owendoff sent a letter to Director Bellon dated September 20, 2017. The letter noted items discussed during their August 15, 2017, conversation including whether work on the Pretreatment (PT) and High-Level Waste (HLW) facilities could be paused for a short period in order to accelerate implementation of DFLAW without impacting WTP milestones and requested a meeting at Ecology's earliest convenience in order to continue the conversation and hear more about Ecology's perspective and priorities regarding Hanford cleanup activities.
- Other accomplishments during the reporting period are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

### **Accomplishments Expected Next Reporting Period**

- The requested meeting noted in the above bullet involving Acting Assistant Secretary for Environmental Management James Owendoff, Ecology Director Maia Bellon and Ecology Nuclear Waste Program Manager Alex Smith is expected to be scheduled in early November 2017.
- Other accomplishments expected in the next reporting period are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.



**Issues Encountered During the Reporting Period**

- Issues encountered during the next reporting period are noted in project reports for PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

**Issues Expected in the Next Reporting Period**

- Issues expected in the next reporting period are noted in project reports for PT Facility, HLW Facility, LAW Facility, BOF, and LAB.



**Waste Treatment and Immobilization Plant Milestones**

<b>Milestone</b>	<b>Title</b>	<b>Due Date</b>	<b>Status</b>
<b>Waste Treatment and Immobilization Plant Project</b>			
D-00A-06	Complete Methods Validations	06/30/2032	On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033	On Schedule
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	On Schedule
<b>Pretreatment Facility</b>			
D-00A-18	Complete Structural Steel Erections Below Elevation 56' in PT Facility	12/31/2009	Complete
D-00A-19	Complete Elevation 98' Concrete Floor Slab in PT Facility	12/31/2031	On Schedule
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels	12/31/2031	On Schedule
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	On Schedule
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	On Schedule
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	On Schedule
<b>High-Level Waste Facility</b>			
D-00A-20	Complete Construction of Structural Steel to 14' in HLW Facility	12/31/2010	Complete
D-00A-21	Complete Construction of Structural Steel to 37' in HLW Facility	12/31/2012	Complete
D-00A-02	HLW Facility Construction Substantially Complete	12/31/2030	On Schedule
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	On Schedule
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	On Schedule
<b>Low-Activity Waste Facility</b>			
D-00A-07	LAW Facility Construction Substantially Complete	12/31/2020	On Schedule
D-00A-08	Start LAW Facility Cold Commissioning	12/31/2022	On Schedule
D-00A-09	LAW Facility Hot Commissioning Complete	12/31/2023	On Schedule
<b>Balance of Facilities</b>			
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete
<b>Analytical Laboratory</b>			
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

BOF = balance of facilities.  
 HLW = high-level waste.  
 LAB = analytical laboratory.

LAW = low-activity waste.  
 PT = pretreatment.  
 WTP = Waste Treatment and Immobilization Plant.



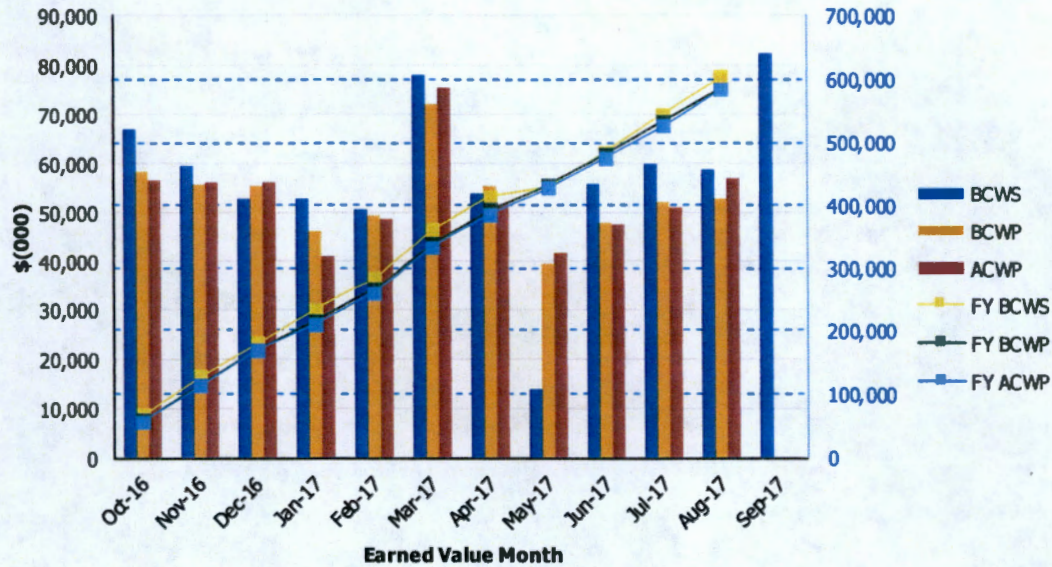
**EXC-01a: Fiscal Year Cost and Schedule Report**

Data Set: FY 2017 Earned Value Data

Data as of: August 2017

**River Protection Project**  
**Waste Treatment Plant (WTP) Project**

## EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2016	\$67,019	\$58,321	\$56,633	0.87	1.03	\$67,019	\$58,321	\$56,633	0.87	1.03
Nov 2016	\$59,361	\$55,681	\$56,299	0.94	0.99	\$126,379	\$114,002	\$112,932	0.90	1.01
Dec 2016	\$52,654	\$55,489	\$56,125	1.05	0.99	\$179,033	\$169,491	\$169,057	0.95	1.00
Jan 2017	\$52,807	\$46,077	\$40,881	0.87	1.13	\$231,840	\$215,568	\$209,938	0.93	1.03
Feb 2017	\$50,489	\$49,354	\$48,627	0.98	1.01	\$282,329	\$264,922	\$258,565	0.94	1.02
Mar 2017	\$78,183	\$72,145	\$75,415	0.92	0.96	\$360,512	\$337,067	\$333,981	0.93	1.01
Apr 2017	\$54,085	\$55,376	\$51,509	1.02	1.08	\$414,597	\$392,443	\$385,490	0.95	1.02
May 2017	\$13,975	\$39,451	\$41,659	2.82	0.95	\$428,572	\$431,894	\$427,148	1.01	1.01
Jun 2017	\$55,640	\$48,136	\$47,667	0.87	1.01	\$484,211	\$480,030	\$474,815	0.99	1.01
Jul 2017	\$59,893	\$51,954	\$50,998	0.87	1.02	\$544,105	\$531,985	\$525,813	0.98	1.01
Aug 2017	\$58,557	\$52,729	\$56,871	0.90	0.93	\$602,662	\$584,714	\$582,685	0.97	1.00
Sep 2017	\$82,547									
PTD	\$10,430,777	\$10,385,723	\$10,312,774	1.00	1.01					

ACWP = actual cost of work performed.  
 BCWP = budgeted cost of work performed.  
 BCWS = budgeted cost of work scheduled.  
 CPI = cost performance index.

PTD = project to date.  
 EVMS = earned value management system.  
 FY = fiscal year.  
 SPI = schedule performance index.



Performance Tracking	SV (\$x1,000)	CV (\$x1,000)
Cumulative (through August 2017)	(\$45,054)	\$72,950
Fiscal Year 2017 to-date	(\$17,948)	\$2,029
August 2017	(\$5,828)	(\$4,142)
July 2017	(\$7,939)	\$956
June 2017	(\$7,503)	\$470

SV = schedule variance.

CV = cost variance.

### Earned Value Management System Analysis

The EVMS is intended to provide a status of how the contractor is progressing against its planned work (i.e., schedule), and whether it is costing more or less to complete the work than planned. The project plan is measured by expressing the schedule in terms of dollars spread over the anticipated project duration, and then for each month, determining how much of the planned work was accomplished or “earned,” as measured in equivalent dollars. If more work is accomplished than planned, then the project is ahead of schedule and has a favorable SV. Similarly, if less work is accomplished, the project is behind schedule and has an unfavorable SV. Accomplished work is reported in the month it was completed, which may not be when it was planned. For example, work completed in a month earlier than planned would be reported as a favorable SV for the month in which it was completed, but would be reported as an unfavorable SV in the month it was planned. The end result would be the overall cumulative SV netting out to zero over these months. Likewise, work completed late will recover an earlier reported unfavorable SV.

The CV measures the actual cost of work performed against the earned dollar value of that performed work. As an example, assume \$10,000 of work was planned to-date, \$8,000 was reported as being performed (earned), at an actual cost of \$9,000. This work would be reported as being \$2,000 behind schedule [a negative or unfavorable SV:  $\$8,000 - \$10,000 = (\$2,000)$ ], and has cost \$1,000 more [a negative or unfavorable CV:  $\$8,000 - \$9,000 = (\$1,000)$ ] than was planned for completing that work scope. Likewise, a favorable or positive CV would be reported if it cost less to complete the work than the performed dollar value of the work.

The SV and CV are reported for each monthly period, fiscal year to-date, as well as for the project-to-date value. The monthly variances can fluctuate significantly (for reasons noted earlier), so the fiscal year or cumulative-to-date report provides a better indicator of the overall project completion status, and can give a reasonable projection of how the project will finish, based on the progress-to-date.



**Schedule Variance Summary:**

For the August EVMS reporting period, a net **unfavorable** SV of approximately (\$5.8 million) was reported, primarily due to the following:

- LBL/DFLAW reported an unfavorable SV of (\$3.6 million) because work planned for this month was performed ahead of schedule and prior to implementation of the Waste Treatment Completion Company accounts. LBL Engineering remains unfavorable because nuclear safety engineering resources continue to be focused on the process hazards analysis, safety strategy summary documents, and comment resolution of the draft Preliminary Documented Safety Analysis (PDSA). DFLAW construction is unfavorable because some installation work on the radioactive Liquid Effluent Retention Facility is still being deferred because of other project priorities, and because a pipe rack delivery for the Effluent Management Facility (EMF) was delayed. LAW Facility construction craft and subcontractors are favorable because they are working ahead of schedule on offgas piping and bulk cable installation at the +48-foot elevation.
- PT Facility reported an unfavorable SV of (\$1.2 million) because mixing test operations work planned for this month by the Test Completion Team was completed in an earlier month. Plant Equipment was unfavorable because of a delay in receipt of the lifting beams.
- HLW Facility reported an unfavorable SV of (\$1.1 million) because work planned for this month on the engineering qualification testing for remote-change, high-efficiency particulate air (HEPA) filters was completed in prior months ahead of schedule. Plant Equipment is unfavorable because work planned for this month on shield plugs had been completed in prior months and because of a delay in receipt of door recovery plugs.

For the July EVMS reporting period, a net **unfavorable** SV of approximately (\$7.9 million) was reported, primarily due to the following:

- LBL reported an unfavorable SV of (\$8.2 million) because work planned for this month was performed ahead of schedule and prior to implementation of the Waste Treatment Completion Company accounts. LBL Engineering remains unfavorable because nuclear safety engineering resources are focused on the process hazards analysis, safety strategy summary documents, and comment resolution of the draft PDSA. This impacts the progression of the LAW Facility Documented Safety Analysis (DSA) chapters and development of the technical safety requirement document. DFLAW construction is unfavorable because some installation work on the radioactive Liquid Effluent Retention Facility was deferred because of other project priorities, and because a pipe rack delivery for the EMF was delayed.
- HLW Facility reported an unfavorable SV of (\$0.6 million) because work planned for this month on the engineering qualification testing for remote-change, HEPA filters was completed ahead of schedule. However, the radioactive liquid disposal system design is behind schedule because of the focus on updating the PDSA. Plant Equipment is unfavorable because a cable reel shipment and delivery was delayed while a quality verification document package review occurred.



- PT Facility reported a favorable SV of \$0.9 million because mixing test operations work planned for this month by the Test Completion Team were completed earlier. Plant Material was unfavorable due to delayed steel deliveries in July.

For the June EVMS reporting period, a net **unfavorable** SV of approximately (\$7.5 million) was reported, primarily due to the following:

- LBL reported an unfavorable SV of (\$6.0 million), because work planned for this month was performed ahead of schedule and prior to formation and implementation of the Waste Treatment Completion Company accounts. LBL Engineering is unfavorable because it is focusing its nuclear safety engineering resources in additional areas. This includes process hazards analysis, which impacts the progression of the LAW Facility DSA chapters. Construction craft is unfavorable due to deferring some installation work until later, and a pipe rack delivery being delayed at the EMF.
- PT Facility reported an unfavorable SV of (\$1.4 million), because of delays in simulant procurements and a change of strategy by the Test Completion Team for the Mid-Columbia Engineering test platform demobilization. In addition, support from the Pacific Northwest National Laboratory for testing demonstrations and test platform maintenance and calibration was performed ahead of schedule.
- HLW Facility reported an unfavorable SV of (\$0.1 million), because engineering qualification testing for remote-change, HEPA filters is ahead of schedule.

#### **Cost Variance Summary:**

For the August EVMS reporting period, a net **unfavorable** CV of approximately (\$4.1 million) was reported, primarily due to the following:

- LBL/DFLAW reported an unfavorable CV of (\$2.8 million) because LBL Engineering (excluding DFLAW) continues to dedicate additional resources to support LAW Facility PDSA comment resolution and process hazard analysis augmentation. LAW Facility construction is unfavorable because of a system error, which caused erroneous charges against LAW Facility construction craft. Cost corrections are underway to move the charges to the appropriate accounts.
- PT Facility reported an unfavorable CV of (\$1.8 million) because the Test Completion Team incurred additional test operations costs not planned for this month.
- Project Services reported a favorable CV of \$0.5 million because actual labor charges were less than planned for this month due to unfilled positions and other/direct costs spending less than budgeted.

For the July EVMS reporting period, a net **favorable** CV of approximately \$1.0 million was reported, primarily due to the following:

- Project Services reported a favorable CV of \$0.8 million because General/Other Services actual labor charges were less than planned caused by a combination of unfilled positions



and holiday leave. Procurement and Engineering also reported favorable CVs because actual labor costs were less than what had been planned.

- PT Facility reported a favorable CV of \$0.6 million because of technical team efficiencies in completing documents to support the full-scale vessel alternative concept design study. Plant Material reported a favorable CV because of an adjustment of accruals from closed work packages.
- LBL reported an unfavorable CV of (\$0.6 million), because LBL Engineering (excluding DFLAW) continues to dedicate additional resources to support LAW Facility PDSA comment resolution and process hazard analysis augmentation.

For the June EVMS reporting period, a net **favorable** CV of approximately \$0.5 million was reported, primarily due to the following:

- Project Services reported a favorable CV of \$0.6 million because some technical equipment costs were being deferred to later months.
- LBL reported an unfavorable CV of (\$1.0 million), because additional LBL Engineering resources are supporting LAW Facility PDSA comment resolution and process hazards analysis augmentation. To adequately support these efforts, additional unplanned resources from other organizations have been designated to support the effort.

#### **WTP Project Cumulative through August 2017**

The WTP Project is behind the planned work scheduled by approximately (\$45.1 million) through August 2017, but it has cost approximately \$72.9 million less to perform the work than originally estimated. The cumulative to-date SVs and CVs are reported against the LBL/DFLAW Performance Measurement Baseline, while the HLW Facility, PT Facility, and Project Services variances are still being reported against an Internal Forecast, pending revised Baseline Change Proposals for those areas.



## Pretreatment Facility

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Wahed Abdul

The PT Facility will separate radioactive tank waste into HLW and LAW fractions, and transfer each waste type to the respective vitrification facility for immobilization. As of September 2012, the PT Facility was 56 percent complete overall, with engineering design 85 percent complete, procurement 56 percent complete, construction 43 percent complete, and startup and commissioning 3 percent complete. The physical percent complete analysis for the PT Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

ORP and BNI continue to work on resolving the remaining technical issues as referenced in the Second Amended Consent Decree<sup>2</sup>, which includes, “Ensuring Control of the Pulse Jet Mixers” (i.e., T4 in relation to pulse-jet mixer (PJM) vessel mixing and control); “Protecting Against Possible Erosion and Corrosion” (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels); and “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process offgas treatment).

Work is also being performed to evaluate the facility design using the standard high-solids vessel (SHSV) test design prototype (i.e., T6 in relation to design redundancy and in-service inspection), and evaluating vessel and equipment structural integrity (i.e., T7 in relation to seismic ground motion criteria changes around 2005).

ORP and BNI continued testing of the PJM SHSV design to replace a number of vessel designs in the PT Facility to resolve concerns over PJM vessel mixing and control (i.e., T4). A prototype of the 16-foot-diameter SHSV was commissioned in December 2016. Testing results will provide the required design and operations information to support PT Facility design. Full-scale PJM controls testing was completed in April 2017. This testing substantiated PJM control parameters and the control approach to be used for the qualification of the design for the SHSV.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

### Accomplishments During the Reporting Period

- Final stage testing of the PJM system to verify mixing parameters started in late June 2017 to support resolution of mixing issues applicable to PT Facility vessels with high solids concentrations and non-Newtonian slurries. Final mixing testing was completed in September 2017 with data analysis and instrument calibration confirmation planned to be completed over the next few months. Testing went well, and the

---

<sup>2</sup> Second Amended Consent Decree, *State of Washington v. Dept. of Energy*, NO: 2:08-CV-5085-RMP (April 12, 2016).



preliminary results indicate the mixing system performed better than expected at this time.

- In early August, ORP and BNI agreed on the assumptions, method of analysis, and results regarding spray leak methodology and sliding bed wear in piping. This was in response to issues identified by the Defense Nuclear Facilities Safety Board (DNFSB) in its 26<sup>th</sup> Annual Report to Congress, dated March 2016. The DNFSB was briefed on the agreed to information noted above. BNI will continue to work on issues related to spray leak methodology and sliding bed wear in piping, and will respond to any concerns identified by the DNFSB during its review of the information noted above.

#### **Accomplishments Expected in the Next Reporting Period**

- BNI is expected to complete data analysis and documentation for the just completed full-scale PJM mixing systems testing of the SHSV design prototype by the end of December 2017.
- BNI is expected to develop an engineering study documenting SHSV conceptual design functions and requirements in support of resolving issues in relation to design redundancy and in-service inspection (i.e., T6).
- BNI is expected to issue the methodology for the vessel structural integrity verification.
- BNI is expected to issue an update to the localized corrosion test basis document.
- BNI will continue to focus on facility preservation and preventative maintenance activities.

#### **Issues Encountered During the Reporting Period**

- PT Facility planned work has been reprioritized because of the need for additional resources to support DFLAW/LBL activities. This has resulted in limited work on technical issue resolution related to erosion/corrosion in piping and vessels and progression of the conceptual design incorporating the SHSV test design prototype due to reduced resources.
  - *Impact:* Delay in completing PT Facility redesign activities. However, the effect of reprioritizing planned PT Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including the remaining technical issue resolution, and engineering, procurement, and construction work at the PT Facility.



### Issues Expected in the Next Reporting Period

- PT Facility planned work could continue to be reprioritized due to increased focus on higher priority DFLAW/LBL activities within WTP. This would result in limited work on technical issue resolution and conceptual design of the SHSV prototype.
  - *Impact:* The PT Facility redesign could be delayed. However, the effect of reprioritizing planned PT Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including the remaining technical issue resolution, and engineering, procurement, and construction work at the PT Facility to ensure funds are made available.

### Status of Outstanding WTP Technical Issues

ORP has determined the nuclear safety technical issues, "Preventing Potential Hydrogen Build-Up" (i.e., T1 and T3) and "Preventing Criticality" (i.e., T2) have been sufficiently resolved to allow engineering to proceed in support of design and safety basis development. Work will continue on resolving remaining technical issues, "Ensuring Control of the Pulse Jet Mixers" (i.e., T4), "Protecting against Possible Erosion and Corrosion" (i.e., T5), and "Ensuring Ventilation Balancing" (i.e., T8).

ORP has worked with BNI to develop closure packages for each technical issue, defining work scope, required deliverables, and technical issue closure criteria. The status for each of the five technical issues as referenced in the Second Amended Consent Decree is provided below:

- **Preventing Potential Hydrogen Build-Up:**
  - *Issue:* This issue encompasses two separate but related hydrogen risks:
    - Risk of combustion in vessel headspace due to hydrogen accumulation (i.e., T1)
    - Risk of hydrogen in piping and ancillary vessels that could lead to a hydrogen deflagration or detonation in a piping system (i.e., T3).
  - *Status:*
    - Hydrogen in Vessels – As noted in the previous Quarterly Report, this technical issue has been sufficiently resolved to allow engineering to proceed in support of design and safety basis development.
    - Hydrogen in Piping and Ancillary Vessels – As noted in the previous Quarterly Report, this technical issue has been sufficiently resolved to allow engineering to proceed in support of design and safety basis development.
- **Preventing Criticality:**
  - *Issue:* A total of 16 Hanford waste tanks may contain plutonium particles of the size and density making them prone to settling in a WTP process vessel in a configuration that could result in an inadvertent criticality event (i.e., T2).



- *Status:* As noted in the previous Quarterly Report, this technical issue has been sufficiently resolved to allow engineering to proceed in support of design and safety basis development.
- ***Ensuring Control of the PJMs:***
  - *Issue:* Concern with adequacy of PJMs and PJM controls to adequately mix high-solids slurries in PT Facility process vessels (i.e., T4 [“Ensuring Control of the Pulse Jet Mixers”]).
  - *Status:*
    - As noted in previous reports, BNI is conducting a test program to demonstrate the ability of PJM vessels to adequately mix high-solids slurries in the PT Facility. Results from the first and second phase of PJM control system testing were previously provided. The final phase of PJM control system testing is complete with data analysis and instrument calibration confirmation planned for completion over the next few months.
    - ORP and BNI identified a proposed PJM mixing SHSV design to replace a number of vessel designs in the PT Facility. A prototype of the 16-foot-diameter SHSV design was commissioned for the final stage of PJM control system testing to support resolution of PJM mixing and control issues applicable to vessels with high-solids concentrations and non-Newtonian slurries. The testing demonstrated the required PJM control parameters and control approach to be used during the qualification of the design for the SHSV implementation. PJM controls testing was completed in April 2017. Mixing testing was completed in September 2017 and will provide the required design and operations information to perform PT Facility design.
- ***Protecting against Possible Erosion and Corrosion:***
  - *Issue:* Uncertainties exist in waste feed characteristics and the ability to meet a 40-year service life; requiring confirmation of the erosion/corrosion design basis, including margin, through testing and analysis (i.e., T5).
  - *Status:*
    - A testing program to provide the technical information to underpin the design basis for erosion and corrosion is being implemented.
    - A WTP Basis of Design Change Notice establishing the erosion/corrosion basis of design parameters has been issued.
    - A pipe loop test platform to evaluate wear in piping is complete and the test plan is in final development. Additional assessments are being made to determine how much of this testing is required.
    - Laboratory scale corrosion testing to assess localized corrosion material degradation mechanisms continues. This testing involves immersion of small metal samples in fluids representing anticipated WTP chemistries. Material degradation mechanisms being evaluated include pitting, crevice cracking, and stress cracking.



- Test platform shakedown of bench scale jet impingement test equipment apparatus continues. This test platform will be used to evaluate erosion wear from the impinging PJM jets in process vessels.
- A multi-mineral synergistic test simulant is being developed for the erosion testing. Selection and qualification of the simulant minerals is in progress.
- **Ventilation System:**
  - *Issue:* There are multiple technical challenges associated with the PT Facility ventilation system, including cascading airflows from lower to higher contaminated areas and performance of HEPA filters (i.e., T8).
  - *Status:*
    - Resolution of this technical issue requires completing engineering/nuclear safety assessments to ensure the PT Facility ventilation system meets performance requirements, which will be initiated once the PJM testing and its ventilation demands are finalized.
    - Testing of HEPA filters to ensure filters can withstand environmental conditions and loading during normal and off-normal operating conditions is complete. HEPA filter design and qualification testing have been performed and reported under the HLW Facility project. Several filter designs were under consideration for testing and qualification. One of the filter designs has successfully completed Nuclear Quality Assurance-1 qualification testing at Mississippi State University for all WTP normal and abnormal conditions. Based on the successful filter design bounding all WTP normal and abnormal conditions, it was concluded that alternative filter designs and testing were not required. The final test report was issued in September 2017.



## High-Level Waste Facility

*Federal Project Director:* Bill Hamel

*Facility Federal Project Director:* Wahed Abdul

Work on the HLW Facility is being performed in accordance with the FY 2017 – FY 2021 Interim Work Plan, although BNI is still working under a limited construction and procurement authorization.

As of September 2012, the HLW Facility was 62 percent complete overall, with engineering design 89 percent complete, procurement 81 percent complete, construction 43 percent complete, and startup and commissioning 4 percent complete. The physical percent complete analysis for the HLW Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

Work on the HLW Facility is being performed in accordance with the FY 2017 through FY 2021 Interim Work Plan. BNI has been working under a limited construction and procurement authorization since 2012, and BNI's efforts this reporting period were focused on completing activities required to resume full production engineering, procurement, and construction of the HLW Facility (i.e., DOE Decision 2A, "Authorization to Resume HLW Procurement and Construction").

To support that effort, BNI submitted a facility completion plan identifying the strategy for obtaining authorization to resume engineering, procurement, and construction of the HLW Facility, which was previously approved by ORP.

To resolve design and operability review comments, BNI has completed all engineering studies and individual comment dispositions. BNI provided the final Design and Operability Disposition Report to ORP in July 2017, summarizing the issue resolutions path forward. ORP reviewed all disposition comments for adequacy. Based on completion of this, BNI notified ORP it had completed the required criteria for DOE Decision 2A pending ORP approval of the updated PDSA.

A multi-discipline ORP review team reviewed BNI documentation for several months to validate completion of all DOE Decision 2A criteria. One of the key documents for obtaining ORP authorization to resume production was updating the HLW PDSA to align facility design with the nuclear safety basis. This was a primary focus of the ORP-chartered Safety Basis Review Team for several months.

Upon resolution of all comments from the Safety Basis Review Team, ORP approved the updated PDSA, Rev. 7, on September 27, 2017. Based on approval of the updated PDSA, ORP issued letter 17-WTP-0179, "Decision 2A Criteria for Authorization to Resume High-Level Waste Facility Procurement and Construction Has Been Met," to BNI on September 27, 2017, indicating DOE Decision 2A criteria for authorization to resume HLW Facility procurement and construction activities have been met.



All testing at Mississippi State University of the redesigned HEPA filter for the safe-change and remote-change housings was completed successfully. The final report from the results of the testing was issued in September 2017.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

#### **Accomplishments During the Reporting Period**

- An ORP multi-discipline review of BNI's request for authorization to proceed with procurement and construction of the HLW Facility based on completion of Decision 2A criteria was completed on September 20, 2017. BNI's request to ORP was in letter CCN: 294937, "Advance Notification of Completion of Decision 2A Criteria and Request for Authorization to Proceed with Procurement and Construction of HLW Facility," dated July 20, 2017.
- BNI transmitted the final revised PDSA change package to ORP in September 2017, incorporating responses to the ORP-chartered Safety Basis Review Team comments. ORP approved Rev. 7 of the HLW Facility PDSA on September 27, 2017.
- ORP issued letter 17-WTP-0179 to BNI on September 27, 2017, indicating DOE Decision 2A criteria for authorization to resume HLW Facility procurement and construction activities has been met.
- BNI issued a final report on the HEPA filter testing and a final selection of HEPA filters supporting the ventilation and offgas systems of HLW and LBL facilities.
- BNI is continuing to design the remaining portions of the radioactive liquid waste disposal system.
- BNI is continuing fabrication of RLD-7 and RLD-8 vessels. These vessels are located in the wet process cell and must be installed prior to concrete slab placement, which will support roof installation and building enclosure.

#### **Accomplishments Expected in the Next Reporting Period**

- BNI will continue to update its long-range planning documents to support a future rebaseline effort.
- As previously reported, BNI will continue to focus on facility preservation and preventative maintenance activities.

#### **Issues Encountered During the Reporting Period**

- HLW Facility planned work has been reprioritized because of the need for additional resources to support DFLAW/LBL activities. This has resulted in limited engineering assets to perform production work and has resulted in construction curtailment.



Reprioritizing work activities impacted design and construction such that installation of roofing and siding on the facility is not expected in the near term.

- *Impact:* Delay in completing HLW Facility redesign activities. However, the effect of reprioritizing planned HLW Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
- *Actions initiated or taken to address potential project schedule slippage:*
  - ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including the remaining engineering, procurement, and construction work at the HLW Facility.
  - ORP will continue to evaluate funding alternatives and planning scenarios to define additional scope that could be performed if increased funding becomes available.

#### **Issues Expected in the Next Reporting Period**

- HLW Facility planned work could continue to be reprioritized due to higher priority DFLAW/LBL activities within WTP. This results in limited engineering and construction resources to perform production work.
  - *Impact:* The HLW Facility redesign activities could be delayed. However, the effect of reprioritizing planned HLW Facility work is not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP will continue to discuss the funding needs for the WTP Project with DOE Headquarters, including identification of necessary funding to efficiently proceed with remaining engineering, procurement, and construction work at the HLW Facility.



**Low-Activity Waste Facility**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Jeff Bruggeman

As of August 2017, the LAW Facility was 64 percent complete overall, with engineering design 85 percent complete, procurement 76 percent complete, construction 91 percent complete, and startup and commissioning 11 percent complete.

Milestones associated with the commissioning of LAW are on schedule.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

**Accomplishments During the Reporting Period**

- BNI completed contractual Interim Milestone A-3, "LBL Construction Complete Performance Based Incentive Fee, Complete Final Assembly of Melter #2," in late August 2017. ORP approved this for payment.
- The 400-kilo-volt-ampere uninterruptible power supply was delivered to the site.
- BNI completed installation of cooling jackets for LAW Facility melter feed and feed preparation process vessels.
- BNI completed hydrostatic testing for process cell vessels.
- BNI completed removal of discharge chamber heaters in melter No. 1.
- BNI completed reinstallation of internal components in wet electrostatic precipitator vessel No. 2.
- BNI installed the offgas pre-heaters in the secondary offgas system.
- BNI issued the 90 percent design review report for the uninterruptible power electrical system.
- ORP approved a PDSA interim change package to reflect additional defense-in-depth structures, systems, and components and changes in safety-significant structures, systems, and components' safety functions and functional requirements.
- BNI moved melter No. 1 into final position.
- BNI completed installation of the LAW Facility secondary offgas/vessel vent process system preheaters, El +48. (Note: El +48 equals greater than the 48-foot elevation.)

**Accomplishments Expected in the Next Reporting Period**

- BNI is expected to perform 90 percent design reviews of the primary and secondary offgas systems.
- BNI is expected to install primary offgas spool fittings (hilltop fittings).



- BNI is expected to perform initial system walkdowns for the following:
  - Plant service air system
  - Instrument air system
  - Plant service water system.
- BNI is expected to continue developing chapters for the PDSA/DSA.
- BNI is expected to complete contractual interim Milestone A-4, “LBL Construction Complete Performance Based Incentive Fee, Complete LAW Bulk Cable, El +48,” ahead of mid-February 2018 contract date.
- BNI is expected to continue work on glass pour seal head assembly for melter No 1.
- BNI is expected to continue work on discharge chamber vent piping and installations of seismic restraint assemblies for melter No. 1 and melter No. 2.
- BNI is expected to continue work on cooling jacket installation of permanent banding for LAW melter feed process vessels VSL-00003 and VSL-00004.
- BNI is expected to continue raceway and cable installations on El +48 elevation.

#### **Issues Encountered During the Reporting Period**

- No new issues were encountered during the reporting period.

#### **Issues Expected in the Next Reporting Period**

- As noted in previous reports, an ongoing issue for the project has been the concern about how BNI has managed its commercial grade dedication (CGD) program.
  - *Impact:* This puts at risk some of the equipment purchased which performs a specific safety function in the LAW Facility. The consequence of identified CGD deficiencies are:
    - Material requisitions with vendors will need to be revised or reestablished to incorporate the new CGD documentation and test requirements.
    - CGD plans produced by both vendors and WTP will be required to be updated; additional documentation and testing will be required to meet the updated CGD plans; where test results or documentation cannot demonstrate items meet the required critical characteristics, items will need to be repurchased to replace existing equipment.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - Additional personnel have been added to the CGD group to work on both WTP-generated and vendor-generated CGD packages to update the CGD plans and documentation to meet current customer expectations.
    - New staff and/or subcontractors have been added to provide subject matter expertise and oversight to enhance the CGD program.



- Efforts will be made to qualify existing items to the new CGD plans. This may involve modifying existing requisitions or reopening closed material requisitions to upgrade the CGD plans and provide additional documentation and testing of items, or generating new material requisitions to purchase replacement equipment that cannot be qualified.
- Also noted in previous reports, nuclear safety documents being developed by BNI during the design phase PDSA and the scheduled activities for the final DSA are taking longer than planned.
  - *Impact:* Delay in DOE approval of the DSA could impact some early LAW Facility commissioning activities. However, the effects of the delay are not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:* ORP approved a PDSA Interim Change Package to reflect additional defense-in-depth structures, systems, and components and changes in safety-significant structures, systems, and components' safety functions and functional requirements. Additional resources (BNI and ORP) have been added to improve process hazard analysis development. ORP issued letters authorizing early procurement and redrafts to mitigate potential schedule impacts. Weekly PDSA/DSA completion progress meetings are held by ORP and BNI where planned metrics are reviewed and discussed.



## **Balance of Facilities**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Jason Young

As of August 2017, BOF was 69 percent complete overall, with engineering design 90 percent complete, procurement 81 percent complete, construction 93 percent complete, and startup and commissioning 30 percent complete. Design of the EMF was 76 percent complete.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

BOF will provide services and utilities to support operation of the main production facilities: PT, HLW, LAW, and LAB. The BOF are designed to support operation of the entire WTP, and construction is complete for the majority of BOF systems. To improve operational flexibility and support WTP operations in a DFLAW configuration, additional construction and facility modifications are required. Operational flexibility improvements to the BOF include:

- Design and construction of an EMF to concentrate effluents from the LAW Facility, allow transfer of secondary effluent stream to the Liquid Effluent Retention Facility/Effluent Treatment Facility, and provide a low point drain for potential contaminated systems during DFLAW operations
- Addition of a fourth rotary screw air compressor to the chiller compressor plant and piping reconfigurations to optimize operations at a reduced facility output level
- Modifications to steam plant piping and equipment to optimize operations at a reduced facility output level
- Construction of a fenced area to separate the portion of WTP actively operating in a DFLAW configuration from the ongoing construction activities for the HLW and PT facilities
- Improved isolation capabilities for BOF systems to maintain safe control and isolation within the DFLAW operations area.

## **Accomplishments During the Reporting Period**

- ORP received approval of the EMF Secondary Containment Permit from Ecology on September 5, 2017.
- ORP submitted the EMF Equipment Package No. 1 permit modification to Ecology for informal review. ORP, BNI, and Ecology worked through all significant comments on the permit modification package and formal submittal is upcoming.
- BNI continued installation of ring beams and secondary steel to support topping slab placement in EMF.
- BNI continued first lift wall placements and rebar and formwork activities to support additional wall placements at EMF.



- BNI awarded a large vessel fabrication contract to Harris Thermal for the EMF evaporator overheads collection vessels and the EMF effluent collection and transfer vessels.
- BNI completed turnover of the nonradioactive, nondangerous liquid disposal system to the Plant Management organization.
- BNI completed functional testing and certification of BOF switchgear Building 91. This completes startup testing activities for the WTP electrical distribution system. Upcoming testing for BOF electrical components will be focused on facility-specific activities.
- BNI completed energized testing of the water treatment facility domestic potable water and process service water systems. The next phase of startup testing will focus on the deionized water system.
- BNI energized the low-voltage electrical system for the cooling tower and began testing of the cooling tower fan motors. Evaluation of the cooling fan blades and gear drives are upcoming.
- BNI completed the fill, vent, and pressure testing of underground piping for the process service water system at the cooling tower.
- ORP received approval of the EMF Underground Transfer Line Permit package from Ecology.
- BNI completed the EMF design to a committed status to support equipment procurements and submitted the "Schedule Declaration of Completion" for the CLIN 2.1 DFLAW Design Completion Fee contractual interim milestone. ORP reviewed the contractual interim milestone completion documentation and concurred with BNI that requirements were met.
- BNI completed transfers from the WTP nonradioactive, nondangerous liquid disposal system to the Treated Effluent Disposal Facility.
- BNI received temporary authorization for placement of EMF topping slabs and associated embedded steel.

#### **Accomplishments Expected in the Next Reporting Period**

- BNI is expected to place EMF low point drain walls.
- BNI is expected to place EMF processing facility topping slab.
- BNI is expected to complete balancing of the cathodic protection system.

#### **Issues Encountered During the Reporting Period**

- BNI is experiencing delays in the system startup and testing program due to equipment installation issues, equipment aging and obsolescence, and because it has taken more time than anticipated to establish support contracts to assist with equipment evaluation and refurbishment activities.
  - *Impact:* Delayed equipment repair and testing of interdependent BOF systems creates a cascading effect impacting testing in other facilities in BOF. However, the effect of



the delays in the schedule are not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.

- *Actions initiated or taken to address potential project schedule slippage:*
  - Additional system walkdowns are being performed to facilitate early identification of issues.
  - Test procedure preparation is being prioritized by BNI Engineering to support reviews and approval in advance of system testing.
  - BNI is working proactively with vendors to establish support contracts to inspect and refurbish equipment as needed.
- Continued delays during BOF system completion and turnover to startup, as described below, are impacting the project schedule.
  - *Impact:* Delayed BOF system completion and turnover to startup is resulting in extending the construction schedule and narrowing the available durations for startup testing. However, the effect of the delays in the schedule are not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - BNI is conducting weekly management meetings to evaluate system completion against the schedule and emphasize the need for system punch list completion.
    - Production meetings are focused on completion of outstanding work items.
    - The startup testing organization introduced additional rigor into system reviews prior to turnover.
    - A task team of inspectors from Underwriters Laboratories, Inc. was assembled to ensure installed equipment has the appropriate Nationally Recognized Testing Laboratory certifications ahead of construction completion turnovers to the startup organization.

#### **Issues Expected in the Next Reporting Period**

- BNI is experiencing delays in the system startup program due to aging and obsolescence of existing equipment and resource availability. In general, startup activities are linked together so when one activity is delayed it creates a waterfall affect. Delays in system turnovers and the startup testing process will continue to challenge the project schedule.
  - *Impact:* Delayed testing of interdependent BOF systems creates a cascading effect impacting testing in other facilities in BOF. However, the effect of the delays in the schedule are not anticipated to affect DOE's ability to achieve Consent Decree milestones at this time.
  - *Actions initiated or taken to address potential project schedule slippage:*
    - Production meetings will continue to focus on completion of outstanding work items.



- The startup testing organization will continue to provide additional rigor into system reviews prior to turnover.
- A task team of inspectors from Underwriters Laboratories, Inc. will continue to ensure installed equipment has the appropriate Nationally Recognized Testing Laboratory certifications ahead of construction completion turnovers to the startup organization.
- Additional system walkdowns will continue to be performed to facilitate early identification of issues.
- Test procedure preparation will continue to be prioritized by BNI Engineering to support reviews and approval in advance of system testing.
- BNI will continue to work proactively with vendors to establish support contracts to inspect and refurbish equipment as needed.



**Analytical Laboratory**

**Federal Project Director:** Bill Hamel

**Facility Federal Project Director:** Jason Young

The LAB will support WTP operations by analyzing samples of waste feed, vitrified waste, and effluent streams from the WTP processing facilities. As of August 2017, the LAB was 68 percent complete overall, with engineering design 87 percent complete, procurement 86 percent complete, construction 97 percent complete, and startup and commissioning 21 percent complete.

**Quarterly Statement:** There are no missed milestones that may affect compliance with other milestones.

**Accomplishments During the Reporting Period**

- BNI continued monitoring systems from the test engineer's workstation in support of turnover and testing activities by the Startup organization.
- BNI continued work in progress to install replacement of the air-conditioning condenser to support the test engineer's work station.
- BNI completed final wall and floor coatings.
- BNI completed turnover of grounding and lightning protection system to the Startup organization.
- BNI submitted a letter to ORP for approval of temporary offsite laboratory space lease.

**Accomplishments Expected in the Next Reporting Period**

- BNI is expected to occupy temporary laboratory space so that development of laboratory methods and training can occur earlier than initially planned to ensure laboratory staff are ready at the start of commissioning.
- BNI is expected to install a toxicity refrigerant monitor needed for beneficial occupancy.
- BNI is expected to complete 90 percent design review of ventilation systems (C1V, C2V, C3V, and C5V).
- BNI is expected to complete turnover of the low-voltage electrical system to the Startup organization.

**Issues Encountered During the Reporting Period**

None encountered.

**Issues Expected in the Next Reporting Period**

None expected.



## Written Directives

Written directives from July 1, 2017, through September 30, 2017, have been included with this report.

Seventeen letters of direction were issued to BNI during the reporting period. The letters are listed below and copies are attached:

- 17-CPM-0094, "Transmittal of Contract Modification No. 397, Approval of Commercial Grade Dedication Extent of Condition Review Plan and Notice to Proceed," – dated July 6, 2017
- 17-CPM-0035, "The U.S. Department of Energy, Office of River Protection's Direction to Bechtel National, Inc. on Contract Requirement to Perform Subcontractor Incurred Cost Audits," dated July 7, 2017
- 17-WTP-0145, "Acceptance of Completion of Contract Milestone DF-01, *"CLIN 2.1 DFLAW Design Completion,"* Schedule Declaration of Completion," dated July 7, 2017
- 17-WTP-0143, "The U.S. Department of Energy, Office of River Protection Concurrence on the Engineering Redraft for the Low-Activity Waste Carbon Dioxide System," dated July 13, 2017
- 17-CPM-0101, "Transmittal of Contract Modification No. 399," dated July 18, 2017
- 17-CPM-0102, "Request for Signature, Contract Modification No. 400," dated July 21, 2017
- 17-CPM-0106, "Transmittal of Contract Modification No. 400," dated August 1, 2017
- 17-CPM-0107, "Transmittal of Contract Modification No. 401, Incremental Funding," dated August 2, 2017
- 17-CPM-0136, "Modification No. 402, Incremental Funding," dated August 21, 2017
- 17-WTP-0163, "Concerns with Balance of Facilities Startup," dated August 23, 2017
- 17-NSD-0030, "Bechtel National, Inc. Authorization for Early Limited Procurements and Upgrading of Existing Structures, Systems, and Components in Support of Direct Feed Low Activity Waste," dated September 11, 2017
- 17-CPM-0144, "Request for Signature, Contract Modification No. 404," dated September 12, 2017
- 17-CPM-0147, "Modification No. 404, De-Obligate Incremental Funding," dated September 21, 2017
- 17-CPM-0152, "Modification No. 405, Incremental Funding," dated September 26, 2017
- 17-NSD-0033, "Approval of Preliminary Documented Safety Analysis Change Package for 24590-WTP-PSAR-ESH-01-002-04, *Preliminary Documented Safety Analysis to Support Construction Authorization; HLW Facility Specific Information, Rev. 7,*" dated September 27, 2017



- 17-WTP-0179, “Decision 2A Criteria for Authorization to Resume High-Level Waste Facility Procurement and Construction Has Been Met,” dated September 27, 2017
- 17-WTP-0184, “Approval of Completion of Activity Milestone Low-Activity Waste A-3, Complete Final Assembly of Melter No. 2,” dated September 28, 2017.



## Retrieval Labor Hours on Self-Contained Breathing Apparatus

**Tank Farms Assistant Manager:** Glyn Trenchard

**Federal Program Manager:** Jeff Rambo

### Labor Hours Expended on SST Retrieval SCBA June 3, 2017<sup>1</sup>, through September 30, 2017

	<b>SCBA Direct Labor Hours</b>	<b>SCBA Subcontractor Hours<sup>2</sup></b>	<b>Total SST Operation Hours</b>	<b>Total Hours<sup>3</sup></b>	<b>Total Percent on SCBA</b>	<b>Detrimental Impacts<sup>4</sup></b>
C Tank Farm	39,540	9,650	49,190	153,197	32%	42
A/AX Tank Farms	18,095	11,580	29,675	92,617	32%	42
<b>Total</b>	<b>57,635</b>	<b>21,230</b>	<b>78,865</b>	<b>245,814</b>	<b>32%</b>	<b>42</b>

<sup>1</sup> Last Quarterly Report the SCBA logs were only available through June 2, 2017. Delays in data uploads were due to the PUREX event and quality assurance log inspections. The June data was added in to this report.

<sup>2</sup> Subcontractor hours include labor hours from subcontractors including North Point Electrical Contracting, Inc.; Geophysical Survey, Inc.; Fowler General Construction; American Electric; BNL Technical Services; and Intermech Inc.

<sup>3</sup> Includes all labor hours supporting SST farms in retrieval including support outside farm fence (Engineering, Project Management and other support accounts).

<sup>4</sup> Detrimental impacts are presented as the number of days in which a stop work related to SCBA use prevented field operations from continuing. It is limited to SCBA stop works only and excludes vapor impacts (i.e., AOP-15 events).

SCBA = self-contained breathing apparatus.

SST = single-shell tank.



## **Spare Reboiler Requirement Status**

***Tank Farms Assistant Manager:*** Glyn Trenchard

***Federal Program Manager:*** Paul Hernandez

Description of activity and progress made for the spare E-A-1 reboiler for the 242-A Evaporator, including a description of cost and schedule performance:

- WRPS awarded a not-to-exceed design/build contract to ABW Technologies in the amount of \$461,000 for fabrication of a spare reboiler, with delivery prior to December 31, 2018. Total estimate at completion is \$776,000.
- WRPS has approved the reboiler final design. ABW Technologies began material procurement and will begin fabrication of the reboiler upon receipt of material. WRPS remains on schedule to have a spare E-A-1 reboiler available for the 242-A Evaporator by the milestone due date of December 31, 2018.



Enclosure

(27 Pages Excluding Cover Sheet)

Written Directives from July 1, 2017, through September 30, 2017





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JUL 06 2017**

17-CPM-0094

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT MODIFICATION NO. 397, APPROVAL OF COMMERCIAL GRADE DEDICATION EXTENT OF CONDITION REVIEW PLAN AND NOTICE TO PROCEED

- References:
1. BNI letter from L.W. Baker to R.L. Dawson, ORP, "H.1 technical direction – Analysis of the Extent of Condition of Audit Finding Related to BNI Commercial Grade Dedication," CCN: 293418, dated December 28, 2016.
  2. BNI letter from K.D. Irwin to W.F. Hamel, ORP, "ORP Direction and Completion of U-14-QAD-RPPWTP-003, Commercial Grade Dedication and Completion of U-14-QAD-RPPWTP-003, Commercial Grade Dedication Program Extent of Condition," CCN: 296146, dated May 10, 2017.

Based upon joint discussion, review and submittal of the Bechtel National, Inc. (BNI) Commercial Grade Dedication (CGD) Extent of Condition (EOC) Review Plan in References 1 and 2, the U.S. Department of Energy, Office of River Protection (ORP) approves the CGD EOC Review Plan as submitted in Reference 1. BNI is directed to execute the review as described in the plan, including CGD documents prioritized as defined in Reference 2. BNI is authorized to commence this work with a not-to-exceed value of \$1,000,000 pending submittal and definitization of the detailed proposal within 45 days of this modification.

As soon as the initial prioritized EOC activities provide adequate results to make informed decisions, but no later than within 30 days of Way Point #1 identified in Reference 2, BNI shall provide a progress report to ORP documenting the results of the EOC reviews of the CGD documents reviewed to date. Based upon these results, BNI and ORP shall discuss any appropriate changes to the remaining scope of the EOC. Changes shall be captured in a revision to the EOC Review Plan and associated scope/estimate submitted for ORP approval. In parallel with this evaluation and revision, BNI shall continue to execute the scope of the EOC review and address resulting remedial actions within the confines of the approved funding in accordance with the prioritization defined in Reference 2.



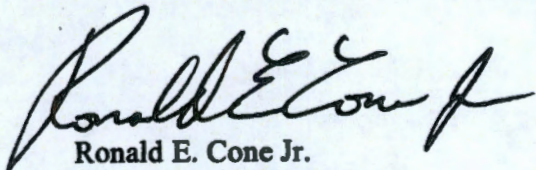
Mr. C.K. Binns  
17-CPM-0094

-2-

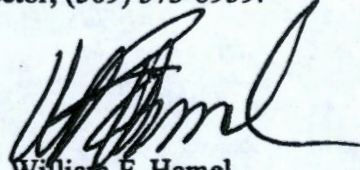
JUL 06 2017

To support efficient sharing of ongoing results, BNI is requested to place the CGD documents reviewed in the performance of the EOC Review Plan in an external eRoom for ORP information. The documents placed in the eRoom shall include the CGD documents reviewed, the supporting material reviewed, the documentation generated by the reviews, the nonconformance reports, if generated as a result of the document review, and any other documentation that will facilitate ORP's review of the EOC process results. BNI and ORP shall meet regularly during the reviews to discuss progress and emerging results.

If you have any questions, please contact Ron Cone or Bill Hamel; or your staff may contact Paul Schroder, Quality Assurance Division Director, (509) 373-8939.



Ronald E. Cone Jr.  
Contracting Officer  
Contracts and Property Management



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

CPM:REC

Attachment

cc w/attach:

D.E. Kammenzind, BNI  
M.G. McCullough, BNI  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

17-CPM-0035

**JUL - 7 2017**

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – THE U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION'S DIRECTION TO BECHTEL NATIONAL, INC. ON CONTRACT REQUIREMENT TO PERFORM SUBCONTRACTOR INCURRED COST AUDITS

- References:
1. ORP letter from R.L. Dawson to L.W. Baker, BNI, "Subcontractor Incurred Cost Requirement," 13-CPM-0072, dated April 4, 2013.
  2. ORP letter from G.F. Champlain to L.W. Baker, BNI, "U.S. Department of Energy, Office of River Protection Requests Copies of Bechtel National, Inc. Subcontractor Cost Audits," 14-CPM-0237, dated November 20, 2014.
  3. BNI letter from L.W. Baker to R.L. Dawson, ORP, "Annual Incurred Cost Audits of Subcontract," CCN: 249083, dated December 2, 2014.
  4. BNI letter from L.W. Baker, to R.L. Dawson, ORP, "Bechtel National, Inc. Response to Request for Copies of Subcontractor Cost Audits," CCN: 257091, dated January 14, 2015.
  5. ORP letter from R.L. Dawson to L.W. Baker, BNI, "Bechtel National, Inc., Status of Annual Incurred Cost Audits of Subcontract," 14-CPM-0285, dated January 26, 2015.
  6. ORP letter from R.L. Dawson to L.W. Baker, BNI, "The U.S. Department of Energy, Office of River Protection's Response to Bechtel National, Inc.'s Response for Copies of Subcontractor Cost Audits," 15-CPM-0021, dated February 13, 2015.
  7. BNI letter from L.W. Baker to R.L. Dawson, ORP, "Bechtel National, Inc. Response to the U.S. Department of Energy, Office of River Protection's Request for Copies of Subcontractor Cost Audits," CCN: 249085, dated March 12, 2015.



JUL - 7 2017

8. BNI letter from L.W. Baker to R.L. Dawson, ORP, "Revised WTP Project Subcontract Audit Plan," CCN: 278350, dated Jun 13, 2015.
9. BNI letter from L.W. Baker to R.L. Dawson, ORP, "WTP Project Subcontract Audit Plan," CCN: 249094, dated November 25, 2015.
10. ORP letter from K.A. Mair to L.W. Baker, BNI, "Response to Bechtel National, Inc.'s Request for Assist Audits of Incurred Costs and Indirect Rates for dominion Engineering, Inc. and Parsons Constructors & Fabricators, Inc.," 15-CPM-0330, dated December 8, 2015.
11. BNI report from P.A. Sanford to R.L. Dawson, ORP, "BNS&E Internal Audit Report Procurement's Process for Auditable Type Contracts," 2015-P02, dated December 15, 2015.
12. BNI letter from C.K. Binns to R.L. Dawson, ORP, "WTP Project Subcontract Audit Plan - FY 2017," CCN: 286774, dated March 2, 2017.
13. BNI letter from C.K. Binns to R.L. Dawson, ORP, "Status of Defense Contract Audit Agency Assist Audits of Incurred Costs and Indirect Rates for BNI Subcontractors and Suppliers," CCN: 293420, dated March 9, 2017.
14. BNI report from P.A. Sanford to R.L. Dawson, ORP, "BNS&E Internal Audit Report Procurement Formation - Contract Type Classification," 2016-P10, dated April 24, 2017.
15. BNI email from B.D. Ponte to R.L. Dawson, ORP, "Revised Draft Subcontract Audit Plan," dated May 12, 2017.
16. BNI PowerPoint presentation from R.T. Ryon, "BNI Subcontract Audit Proposal," dated June 20, 2017.
17. ORP letter from R.L. Dawson to C.K. Binns, "Bechtel National, Inc. Expressly Unallowable Training on Overtime Labor Costs," 17-OCC-0026, dated June 26, 2017.
18. BNI email from C.K. Binns to R.L. Dawson, ORP, "Subcontract Audit Plan," dated June 27, 2017.



JUL - 7 2017

The purpose of this letter is to inform Bechtel National, Inc. (BNI) that it is not in compliance with Contract Clause I.112, DEAR 970.5204-9 *Accounts, Records, and Inspection* (May 2000), paragraph (c) *Audit of Subcontractors' Records*. Contract Clause I.112 requires BNI to either conduct an audit for any flexibly-priced subcontract or arrange for such an audit to be performed by the cognizant Government audit agency through the Contracting Officer (CO). In Reference 12, BNI informed the U.S. Department of Energy (DOE), Office of River Protection (ORP) that BNI had closed out 141 subcontracts, since October 1, 2009, without conducting (or arranging) an audit. In addition, the current BNI proposed subcontractor audit path will not achieve an acceptable audit standard. Not performing the audits is a violation of Contract Clause I.112. BNI is directed to comply with the contract terms and conditions. Compliance must be demonstrated to ORP within 30 calendar days from the date of this letter. If BNI cannot demonstrate compliance, ORP will begin withholding provisional fee until such compliance is demonstrated.

ORP has reviewed the Subcontract Audit Plans submitted by BNI via References 12, 15, 16, and 18. ORP found the plans to contain multiple deficiencies to be considered an acceptable audit plan. These deficiencies have been communicated to BNI during the May 9, 2017, and June 20, 2017, meetings with DOE.

With this background, BNI is directed to submit to ORP, no later than 30 calendar days from the date of this letter, a subcontract audit plan that, at the minimum, meets the following:

1. Submit (i) a listing of subcontracts that BNI deems fall under federal cognizance, (ii) the point-of-contact information for the Cognizant Audit Agency (CAA), and (iii) the subcontractor's incurred cost submission, so that ORP can schedule an audit from the CAA. However, if ORP is unable to arrange for audit support from the CAA, the requirement to conduct subcontract audits remains with BNI.
2. Demonstrate the Certified Public Accountant (CPA) firms and BNI's subcontract audit team is an independent function in accordance with audit standards to avoid any independence violations or conflicts of interest. In Reference 11, BNI Internal Audit stated on page 15, "Incurred Cost and Control System audits can be very complex and require specialized knowledge not commonly available within the Procurement or even Controller functions."
3. Consistent with BNI's proposal in Reference 16 (page 5), support an audit by an independent CPA firm contracted by ORP, to audit the BNI subcontract database to verify subcontracts have been properly classified. The audit will include a review of all BNI subcontracts from contract inception. Access to records is required by Contract Clauses I.112, 970.5204-9 *Accounts, Records, and Inspection* (May 2000) and I.118, DEAR 970.5204-79 *Access to and Ownership of Records* (June 1997).



JUL - 7 2017

4. Ensure the audits as a minimum meet or exceed audit standards (e.g., unmodified Generally Accepted Government Auditing Standards [GAGAS] or, industry standard(s) such as unmodified Institute of Internal Auditors [IIA] standards), to include independence of the audit function. The standard(s) must be acceptable to the CO to determine allowability of subcontract costs. BNI shall propose the standard(s) and demonstrate how BNI will implement and comply with the proposed standard(s). (Please note that in Reference 11, BNI Internal Audit found that, although BNI had stated that the audit were conducted in accordance with GAGAS, the audit clearly did not yet meet GAGAS.)
5. Provide a settlement proposal to ORP within 60 calendar days for the 141 cost-reimbursable and time & materials subcontracts closed without audits since October 1, 2009, (Reference 12, page 6) and all other flexibly-priced subcontracts closed without audit prior to October 1, 2009. In addition, include any other subcontracts requiring audit that are now un-auditable for any other reason.
6. Consistent with BNI proposal in Reference 16 (page 5), perform additional testing procedures on all the subcontract reviews performed under BNI Subcontract Procurement to verify compliance with an acceptable audit standard (e.g., unmodified GAGAS or IIA).
7. When subcontracts are selected for audit, verify all years of the period of performance are audited for all applicable subcontracts (e.g., both cost-reimbursable and time & materials subcontracts).
8. Consistent with BNI's proposal in Reference 16 (page 6), project the error rate from audits completed to the unaudited subcontract population.
9. Verify that all audits included labor testing procedures to identify any instances of Training on Overtime as instructed in Reference 17 (page 6).
10. In all audits, disclose all questioned costs, regardless of amount, within the audit reports. (NOTE: This can be done in the body of the report or in an appendix.)
11. Provide completed subcontractor audit reports to ORP within 30 calendar days of their completion.
12. Perform audits on all open flexibly-priced subcontracts greater than or equal to \$1 million, or any lesser dollar threshold that BNI determines necessary.
13. Prepare a milestone timeline with deliverable dates for when the subcontractor incurred cost audits will be completed.
14. Do not utilize Quick-Closeout procedures without written approval from the CO that all Federal Acquisition Regulation 42.708 requirements have been met.

BNI is contractually required to implement the direction contained in this letter immediately upon receipt, and not wait until submittal and subsequent DOE approval of a revised audit plan reflecting this direction.



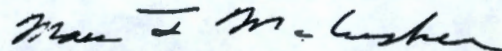
Mr. C.K. Binns  
17-CPM-0035

-5-

JUL - 7 2017

Because subcontractor audits have always been required by Contract Clause I.112, this direction is not a contract change and BNI is not entitled to an equitable adjustment. Since DOE does not have privity of contract with BNI's subcontractors and BNI has not completed audits as required by Contract Clause I.112, any potential unallowable costs are inherently unknowable to DOE; therefore the statute of limitations does not apply to these costs. Further, without an adequate plan and subsequent audits, the CO will be unable to determine reasonableness and/or allowability of the subcontract costs. Consequently, ORP will consider additional contract actions, including withholding a percentage to be determined from BNI's vouchers, until the subcontract audit plan is received, approved, and implemented.

If you have any questions or need additional information, please contact Ronnie Dawson, Contracting Officer, on (509) 372-0095.



Marc T. McCusker,  
Contracting Officer  
Director, Contracts and Property  
Management Division

CPM:MTM

cc: BNI Correspondence





OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

JUL - 7 2017

17-WTP-0145

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – ACCEPTANCE OF COMPLETION OF  
CONTRACT MILESTONE DF-01, "CLIN 2.1 DFLAW DESIGN COMPLETION,"  
SCHEDULE DECLARATION OF COMPLETION

Reference: BNI letter from C.K. Binns to R.L. Dawson, ORP, "Notification of Completion of  
Activity Milestone DFLAW DF-01, *CLIN 2.1 DFLAW Design Completion*,  
Schedule Declaration of Completion," CCN: 291539, dated May 30, 2017.

On May 30, 2017, Bechtel National, Inc., (BNI) notified the U.S. Department of Energy, Office  
of River Protection, (ORP) via the Reference, that activity milestone Direct Feed Low-Activity  
Waste DF-01, *CLIN 2.1 DFLAW Design Completion*, Schedule Declaration of Completion had  
been completed. ORP has reviewed the information provided and concurs that BNI, has met the  
contract requirements for the Direct Feed Low-Activity Waste DF-01 Schedule Declaration of  
Completion, eleven months ahead of the schedule incentive date of April 30, 2018.

ORP approves completion of the schedule incentive fee portion of the milestone. In accordance  
with the schedule incentive terms, BNI has earned \$1,100,000 in schedule incentive fee. Once  
the cost incentive fee portion is determined, final fee earnings for *CLIN 2.1 DFLAW Design  
Completion* will be determined, and BNI will be authorized to invoice for fee earned above the  
provisional fee paid, or return any provisional fee paid in excess of the final fee earned.

If you have any questions, please contact George F. Champlain, Contracting Officer,  
(509) 376-6678, Bill Hamel, Federal Project Director, (509) 376-6727, or your staff may contact  
Jason Young, Federal Project Director, Analytical Laboratory and Balance of Facilities,  
(509) 376-0375.

A handwritten signature in blue ink, reading "George F. Champlain".

George F. Champlain  
Contracting Officer

A handwritten signature in black ink, reading "William F. Hamel".

William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JDY

cc: BNI Correspondence





OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

JUL 13 2017

17-WTP-0143

Ms. K.D. Irwin  
Project Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Ms. Irwin:

CONTRACT NO. DE-AC27-01RV14136 – THE U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION CONCURRENCE ON THE ENGINEERING REDRAFT FOR THE LOW-ACTIVITY WASTE CARBON DIOXIDE SYSTEM

Reference: BNI letter from K.D. Irwin to W.F. Hamel, ORP, "Development of an Engineering Redraft for the Low-Activity Waste Carbon Dioxide System," CCN: 272836, dated June 27, 2017.

This letter provides U.S. Department of Energy, Office of River Protection concurrence with the Bechtel National, Inc., study 24590-LAW-ES-ENG-17-0001, Rev. 0 *Engineering Re-Draft Study – LAW Carbon Dioxide (CDG) System*, transmitted via the Reference.

If you have any questions, please contact me, or your staff may contact Paul Hirschman, Director Waste Treatment and Immobilization Plant, Engineering Division, (509) 376-2477.

Handwritten signature of George F. Champlain in cursive.

George F. Champlain  
Contracting Officer

Handwritten signature of William F. Hamel in cursive.

William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JMB

cc BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JUL 18 2017**

17-CPM-0101

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT  
MODIFICATION NO. 399

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$54,300,000. This allotment of funding should mitigate any funding shortfall impacts referenced in BNI letter CCN 296502. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**JUL 21 2017**

17-CPM-0102

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 – REQUEST FOR SIGNATURE, CONTRACT  
MODIFICATION NO. 400**

The purpose of this letter is to transmit the subject modification for signature. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to de-obligate incremental funding in the amount of \$9,000,000 from High-Level Waste. This funding will be re-obligated in a future contract modification to Low Activity Waste and Balance of Facilities. Please sign and return two (2) originals of the attached contract modification to the Contracting Officer. An executed original of the contract modification will be returned for your records once the signed originals are received.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in cursive script that reads "Katie Mair".

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

AUG 01 2017

17-CPM-0106

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT  
MODIFICATION NO. 400

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, by de-obligating incremental funding in the amount of \$9,000,000 from High-Level Waste. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact Katie Mair at (509) 376-4427.

George F. Champlain  
Contracting Officer

CPM:GFC

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**AUG 02 2017**

17-CPM-0107

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL OF CONTRACT  
MODIFICATION NO. 401, INCREMENTAL FUNDING

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, by obligating incremental funding in the amount of \$6,000,000 to the Low-Activity Waste and \$3,000,000 for the Balance of Facilities. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-5583.

A handwritten signature in blue ink, reading "Ronald E. Cone Jr.", is positioned above the printed name and title.

Ronald E. Cone Jr.  
Contracting Officer

CPM:REC

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**AUG 21 2017**

17-CPM-0136

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

**CONTRACT NO. DE-AC27-01RV14136 –MODIFICATION NO. 402, INCREMENTAL FUNDING**

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, by obligating incremental funding in the amount of \$89,400,000.00. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in blue ink that reads "Katie Mair".

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**AUG 23 2017**

17-WTP-0163

Ms. K.D. Irwin  
Project Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Ms. Irwin:

**CONTRACT NO. DE-AC27-01RV14136 – CONCERNS WITH BALANCE OF FACILITIES  
STARTUP**

Reference: ORP letter from W.F. Hamel to J.M. St. Julian, BNI, "Transmittal of Owner's Representative January 25, 2017, Independent Oversight Review Summary Report for Evaluation of the Turnover, Startup and Commissioning Processes for WTP Project Facilities and Systems," 17-WTP-0034, dated March 1, 2017

The purpose of this letter is to convey the U.S. Department of Energy, Office of River Protection concerns over the execution of the Balance of Facilities (BOF) construction turnover and startup activities, and the unexpected rate of change to the performance measurement baseline (PMB) following the recently executed rebaseline of the Low-Activity Waste Facility, BOF, and Analytical Laboratory. As the Federal Project Director for the Waste Treatment and Immobilization Plant (WTP) Project, I am requesting Bechtel National, Inc. (BNI) identify management actions to be taken to address and correct the negative project execution trends discussed below.

**BOF Turnover and Startup Schedule**

BNI has been unable to successfully execute to the recently revised startup waterfall schedule implemented in baseline change proposal (BCP) 24590-WTP-TN-PC-17-0049. The revised plan was incorporated into the baseline schedule in May 2017 and by month-end July 2017 multiple activities are showing significant schedule delays to the revised plan. In key facilities such as the cooling tower facility, water treatment building, and chiller compressor plant, multiple startup activities are experiencing delays of 1 to 6 weeks from the schedule incorporated in the PMB just 2 months earlier.

The WTP Owner's Representative provided multiple recommendations to assist in making the turnover process more effective (Reference). For example, the attachment to the Reference, the Owner's Representative report (Section 7, Table 2, Risk Item No. 2) provided a



AUG 23 2017

recommendation for BNI to accelerate or prevent slippage of the WTP Project schedule by dedicating sufficient resources to identify and complete construction work-to-go items, including outstanding engineering work, sufficiently ahead of 8-week walkdowns of systems scheduled for turnover from construction to startup. BNI declined to implement this recommendation based on the BNI interpretation that additional staffing would be required. The term "sufficient resources" does not necessarily infer additional staffing, rather it infers an appropriate mix of the right resources to more effectively accomplish the technical and schedule objectives within project resource constraints.

I expect BNI leadership to place additional near-term emphasis on adherence to the BOF startup waterfall schedule, and to more clearly identify planned management actions that will be taken to address the negative schedule performance. BNI is requested to schedule a meeting with me and my staff in the next 30 days to address changes that will be made to reverse the negative performance trends in the BOF startup waterfall and to maintain the schedule documented in the May 2017 BCP. The briefing should include a reconsideration of recommendations made by the Owner's Representative in the Reference.

Rate of Change to Performance Measurement Baseline

ORP's review of the project baseline indicates a bow-wave of project scope is being created, which will not be supportable within the current funding and schedule parameters of the project. BNI has processed 121 BCPs since the start of fiscal year 2017. As additional resources are required to accomplish the new activities added by the BCPs, other required scope is being delayed at increased cost due to escalation and replanning efforts. I am concerned about the excessive rate of BCP implementation, continued growth of the project PMB, and BNI's inability to successfully realize the management challenges incorporated into the project baseline. I request that BNI schedule a meeting with me and my staff in the next 30 days to explain how BNI is managing PMB growth and still meeting project cost and schedule objectives. I am also requesting that BNI submit an fiscal year 2018 spend plan that demonstrates compliance with the project funding profile and project schedule objectives.

If you have any questions, please contact me, at (509) 376-6727 or your staff may contact the Balance of Facilities Federal Project Director, Jason Young at (509) 619-3217.



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JJD

cc: BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**SEP 11 2017**

17-NSD-0030

Ms. K.D. Irwin  
Project Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Ms. Irwin:

**CONTRACT NO. DE-AC27-01RV14136 – BECHTEL NATIONAL, INC. AUTHORIZATION  
FOR EARLY LIMITED PROCUREMENTS AND UPGRADING OF EXISTING  
STRUCTURES, SYSTEMS, AND COMPONENTS IN SUPPORT OF DIRECT FEED LOW  
ACTIVITY WASTE**

Reference: ORP letter from W.F. Hamel and R.L. Dawson to K.D. Irwin, BNI, "Bechtel National, Inc. Early Limited Procurement of Ammonia Isolation Interlock in Support of Direct Feed Low-Activity Waste Operations," 17-NSD-0026, dated August 15, 2017.

The U.S. Department of Energy, Office of River Protection (ORP) hereby authorizes Bechtel National, Inc. (BNI) to perform design, procurement, and construction of new safety structures, systems, and components (SSC), and upgrading of the functional classification of existing SSCs as specified in the attachments. Attachment 1 identifies items for which design, early procurement, and construction activities are authorized. Attachment 2 identifies the current agreed to existing SSC items for which upgrading to safety significant using the BNI "redraft" process is authorized. Other SSCs which require redraft or procurement are undergoing final review by the Safety Basis Review Team and will be addressed accordingly.

The schedule for direct feed low activity waste operations would be adversely impacted if procurement of new SSC is delayed until the current revision to the Low-Activity Waste Facility Preliminary Documented Safety Analysis under preparation is approved. In order to mitigate this schedule risk, ORP is authorizing these early procurements and functional classification upgrades.

The safety functions and functional requirements, as currently understood, are provided for each of the components in the attachments. The safety functions and functional requirements specified in this letter are those that have been developed and provided by BNI. The draft hazard analysis basis supporting these attachments have been reviewed by the ORP Safety Basis Review Team, which concurred with the control strategies. ORP understands these SSCs and the associated safety functions and functional requirements will be included in the forthcoming revision to the Low-Activity Waste Preliminary Documented Safety Analysis that will be reviewed for approval by ORP.



Ms. K.D. Irwin  
17-NSD-0030

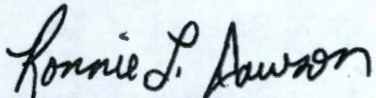
-2-

SEP 11 2017

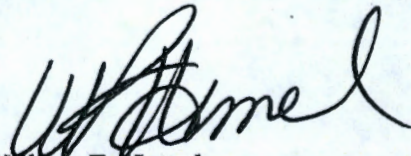
This letter also rescinds the Reference. Modifications to the safety controls identified in the Reference were determined to be necessary to optimize the control selection.

BNI is requested to notify the ORP Nuclear Safety Division Director by letter of any proposed changes to the safety parameters documented in Attachment 1, and obtain ORP's concurrence for the proposed change prior to awarding the procurement for those components. If implementation of the new or reclassified SSCs results in a request for equitable adjustment, entitlement and quantum will be determined at a later date.

If you have any questions, please contact either of us, or your staff may contact John P. Harris, Director, Nuclear Safety Division, (509) 376-8128.



Ronnie L. Dawson  
Contracting Officer



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

NSD: KRS

Attachments: (2)

cc w/attachs:  
R.T. Brock, BNI  
M.G. McCullough, BNI  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**SEP 12 2017**

17-CPM-0144

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – REQUEST FOR SIGNATURE, CONTRACT  
MODIFICATION NO. 404

The purpose of this letter is to transmit the subject modification for signature. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to de-obligate incremental funding in the amount of \$7,000,000 from Low-Activity Waste. This funding will be re-obligated in a future contract modification to High-Level Waste. Please sign and return two (2) originals of the attached contract modification to the Contracting Officer. An executed original of the contract modification will be returned for your records once the signed originals are received.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in black ink, reading "Katie Mair", is positioned above the typed name and title.

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

SEP 21 2017

17-CPM-0147

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – MODIFICATION NO. 404, DE-OBLIGATE  
INCREMENTAL FUNDING

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to de-obligate incremental funding in the amount of \$7,000,000 from Low-Activity Waste. This funding will be re-obligated in a future contract modification to High-Level Waste. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**SEP 26 2017**

17-CPM-0152

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 –MODIFICATION NO. 405, INCREMENTAL FUNDING

The purpose of this letter is to transmit an executed original of the subject modification. This modification revises Contract Section B, *Supplies or Services and Prices/Costs*, to obligate incremental funding in the amount of \$87,660,241.46. The updated conformed contract section can be accessed from the U.S. Department of Energy, Office of River Protection website.

If you have any questions regarding this contract action, please contact me at (509) 376-4427.

A handwritten signature in black ink that reads "Katie Mair".

Katie A. Mair  
Contracting Officer

CPM:KAM

Attachment

cc w/attach:  
BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**SEP 27 2017**

17-NSD-0033

Mrs. M.G. McCullough, Project Director  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mrs. McCullough:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF PRELIMINARY  
DOCUMENTED SAFETY ANALYSIS CHANGE PACKAGE FOR 24590-WTP-PSAR-ESH-  
01-002-04, *PRELIMINARY DOCUMENTED SAFETY ANALYSIS TO SUPPORT  
CONSTRUCTION AUTHORIZATION; HLW FACILITY SPECIFIC INFORMATION*, REV. 7

Reference: BNI letter from K.D. Irwin to W.F. Hamel, ORP, "Supersedes CCN 296651 and  
CCN 298892 – Regulatory Deliverable 9.1 – Preliminary Documented Safety  
Analysis Change Package for the Preliminary Documented Safety Analysis to  
Support Construction Authorization; HLW Facility Specific Information,"  
CCN: 298893, dated September 14, 2017.

The submitted 24590-WTP-PSAR-ESH-01-002-04, *Preliminary Documented Safety Analysis to Support Construction Authorization; HLW Facility Specific Information* (PDSA) (Attachment 1) is a substantial rewrite of the prior document to reflect the previously approved but unincorporated Safety Design Strategy (Attachment from CCN: 267932, "Transmittal of 24590-HLW-PL-ENS-13- 0001, Revision 0, Safety Design Strategy for the High-Level Waste Facility") from 2014, insights from recently completed hazards and accident analyses, and progress in resolving outstanding project technical issues (e.g., hydrogen generation in piping and vessels). The submittal is included in the High-Level Waste (HLW) Facility completion plan (CCN: 294932, "Submission of 24590-HLW-PL-MGT-16-0001, Rev B, *High-Level Waste Facility Completion Plan*," March 2017) approved by the U.S. Department of Energy, Office of River Protection (ORP) in April 2017 (17-WTP-0077, "Approval of the High-Level Waste Facility Completion Plan") as a requirement to support Decision 2A (future authorization to resume HLW Facility procurement and construction). Future PDSA and documented safety analysis updates will be relied upon to ensure the evolving design continues to meet applicable requirements and will support facility startup and operation.

An integrated safety basis review team was formed by ORP to perform the review and evaluation of the Bechtel National, Inc., proposed PDSA changes. The review, evaluation, and preparation of the attached Safety Evaluation Report (SER) was conducted in accordance with ORP



implementing procedure TRS-OA-IP-011, *Safety Basis/Safety Design Basis Document Review Management*, Rev. 0. Changes to the PDSA change package to incorporate the results of review comments were agreed to by ORP, and those changes are correctly incorporated in the change package submittal.

Approval of this document constitutes resolution of open issues identified in various Defense Nuclear Facilities Safety Board letters regarding unanalyzed hazards or inadequate control strategies based on their review of previous HLW documents including the Safety Design Strategy (Attachment in CCN: 267932). These letters are concerning:

- Melter accident scenarios addressed in SER Section 2.2.3, page 17
- Hydrogen explosion control strategy SER Section 2.3, page 22
- Seismic classification of the C5V SER Section 2.2.3, page 15.

Three legacy conditions of approval regarding HLW safety basis documents are now closed based upon the safety basis review team analysis of this PDSA. These previous conditions of approval are addressed in the attached SER Section 2.8.1.

Based on the information provided in letter CCN: 298893 (Reference) and the attached SER, the proposed changes with the above conditions of approval are determined to be acceptable. The changes comply with applicable laws, regulations, and Waste Treatment and Immobilization Plant contractual requirements. There is reasonable assurance the health and safety of the public, workers, and the environment will not be adversely affected by these changes.

The specific proposed revision to the HLW PDSA is to be implemented as the facility PDSA within 60 days following ORP approval. Approval of the revised HLW PDSA, as provided in the Reference, does not independently authorize the procurement of materials, fabrication, and/or installation. That approval is associated with the previously described Decision 2A.

The action taken herein is considered to be within the scope of work of the existing contract and does not authorize the Contractor to incur any additional costs (either direct or indirect) or delay delivery to the Government. If the Contractor considers that carrying out this action will increase contract/project costs or delay of delivery, the Contractor shall promptly notify the Contracting Officer orally, confirming and explaining the notification in writing within ten (10) calendar days, and otherwise comply with the requirements of the Contract clause I.84 FAR 52.243-7, — "Notification of Changes (APR 1984)." Following submission of the written notice of impacts, the Contractor shall await further direction from the Contracting Officer.



Mrs. M.G. McCullough  
17-NSD-0033

-3-

SEP 27 2017

If you have any questions, please contact John P. Harris, Director, Nuclear Safety Division,  
(509) 376-8128.



Kevin W. Smith  
Manager

NSD:DJL

Attachments: (2)

cc w/attachs:

P.K. Fox, DNFSB

D.M. Gutowski, DNFSB

M.G. McCullough, BNI

BNI Correspondence





OFFICE OF RIVER PROTECTION

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

SEP 27 2017

17-WTP-0179

Mrs. Margaret McCullough, Project Director  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mrs. McCullough:

CONTRACT NO. DE-AC27-01RV14136 – DECISION 2A CRITERIA FOR  
AUTHORIZATION TO RESUME HIGH-LEVEL WASTE FACILITY PROCUREMENT AND  
CONSTRUCTION HAS BEEN MET

- References:
1. ORP letter from R.L. Dawson and W.F. Hamel to M.G. McCullough, BNI, "High-Level Waste Facility Path to Full Authorization and Revised Baseline," 16-WTP-0010, dated January 28, 2016.
  2. BNI letter from M.G. McCullough to W.F. Hamel, "Advance Notification of Completion of Decision 2A Criteria and Request for Authorization to Proceed with Procurement and Construction of HLW Facility," CCN: 294937, dated July 20, 2017.
  3. ORP Letter from K.W. Smith to M.G. McCullough, BNI, "Approval of Preliminary Documented Safety Analysis Change Package for 24590-WTP-PSAR-ESH-01-002-04, *Preliminary Documented Safety Analysis to Support Construction Authorization; HLW Facility Specific Information, Rev. 7,*" 17-NSD-0033, dated September 27, 2017.
  4. ORP letter from R.L. Dawson and W.F. Hamel to M.G. McCullough, BNI, "Authorization to Proceed with High-Level Waste Facility Production Engineering, and Conditional Procurement and Construction," 14-WTP-0162, dated August 19, 2014.
  5. BNI letter from M.G. McCullough to W.F. Hamel, "Submission of 24590-HLW-PL-MGT-16-0001, Rev B, *High-Level Waste Facility Completion Plan,*" CCN: 294932, dated March 31, 2017.

The U.S. Department of Energy, Office of River Protection (ORP) has reviewed Bechtel National, Inc. (BNI) completion of the required criteria for Decision 2A, authorization to resume



Mrs. Margaret McCullough  
17-WTP-0179

-2-

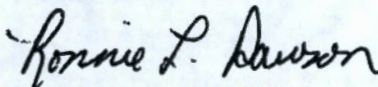
SEP 27 2017

High-Level Waste (HLW) Facility, as established in Reference 1 and documented by BNI in Reference 2. Based on the review, ORP acknowledges that the criteria to resume HLW Facility procurement and construction has been met, including ORP approval of the updated preliminary documented safety analysis (Reference 3). However, resumption of HLW Facility activities is constrained to the current internal forecast level of activities due to other higher priorities.

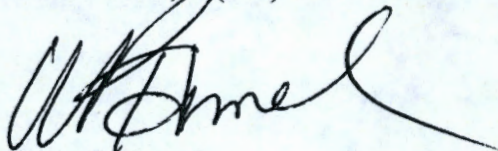
Based on completion of the Decision 2A criteria, conditions put on HLW Facility procurement and construction activities in Reference 4, are removed by this letter. However, ORP reiterates that for performance of HLW Facility activities BNI shall adhere to the engineering and nuclear safety process improvements, as delineated in Reference 5. Improvements include implementation of systems engineering processes and robust system design reviews to ensure that the HLW Facility meets design, operability, and safety requirements. Accordingly, BNI shall perform design reviews to ensure that design meets facility operability requirements prior to the procurement of new equipment.

ORP acknowledges that there are certain open actions associated with Decision 2A criteria, which cannot be completed until design progresses. These actions are being tracked and managed to closure as part of the BNI Corrective Action Management Program.

If you have any questions, please contact Wahed Abdul, HLW-Pretreatment Facility Federal Project Director, Waste Treatment and Immobilization Plant, at (509) 438-0455.



Ronnie L. Dawson  
Contracting Officer



William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:WA

cc: BNI Correspondence





**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**SEP 28 2017**

17-WTP-0184

Mr. C.K. Binns  
Business Services Manager  
Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

Mr. Binns:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF COMPLETION OF ACTIVITY  
MILESTONE LOW-ACTIVITY WASTE A-3, COMPLETE FINAL ASSEMBLY OF  
MELTER NO. 2

Reference: BNI letter from C.K. Binns to R.L. Dawson, ORP, "Supersedes CCN 295772 -  
Notification of Completion of Activity Milestone LAW A-3, *Complete Final  
Assembly of Melter #2*," CCN: 298479, dated September 19, 2017.

On September 19, 2017, Bechtel National, Inc. (BNI) notified the U.S. Department of Energy,  
Office of River Protection (ORP), via the Reference, that Activity Milestone A-3, *Complete  
Final Assembly of Melter #2*, had been completed. ORP has reviewed the information provided  
and concurs that BNI has completed Activity Milestone A-3.

ORP approves completion of the milestone and authorizes BNI to invoice for the milestone  
completion value of \$4,275,000 minus Provisional Fee Payments made to date. For tracking  
purposes, it is requested that a separate invoice be submitted for this milestone.

If you have any questions, please contact George F. Champlain, Contracting Officer,  
(509) 376-6678 or William F. Hamel, Federal Project Director (509) 376-6727.

George F. Champlain  
Contracting Officer

William F. Hamel  
Assistant Manager, Federal Project Director  
Waste Treatment and Immobilization Plant

WTP:JMB

cc: BNI Correspondence